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MORE TREES IN THE TROPICS:

REPEAT PHOTOGRAPHY AND LANDSCAPE CHANGE IN HONDURAS, 1957-2001

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Dedication

I dedicate this work to
Robert C. West and Terry G. Jordan,
two great geographers, and to
all the wonderful Hondurans from whom I learned.

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Introduction

Tegucigalpa, Honduras. December 2001. I am sitting in a coffee shop in the middle of the city, two blocks from the main plaza. Around me, people at small formica tables suck frozen *granita lattes* through plastic straws. Two old men, who actually have regular coffee (*café americano*), talk excitedly about politics. From the back of the room, the espresso machine hisses. In the front, glass doors stand open to the busy street a few feet away. Outside the open doors, the city pulses.

The narrow sidewalks, faced by dust-covered storefronts, are full. A middle-aged blind man sits on a window ledge and holds out a dirty paper cup from Pizza Hut hoping for spare change from passersby. An electronics store blares Aerosmith's "Walk This Way" from two black speakers propped in its open doors. Women of all ages brisk past in high heels, pushing against tight, black miniskirts. Men of all ages saunter along, looking the women up and down. A youth calls out "*Música! Música!*" from behind a wooden tray covered with pirated compact discs. Three laughing street kids, high from the glue they keep in baby food jars hung around their necks, play *futbolito* with a chunk of wood and harass passersby to give them something. A private security guard hands one an ice cube from his drink as he passes. The kid eagerly pops it into his mouth and crunches it up before the others can take it away. A father escorts his three young sons, all three in cardboard Burger King crowns, one upside down.

The narrow street is busier than the sidewalks. Horns blare and diesel exhaust thickens the air. A vendor pushes an aluminum cart that reads "Porky's American Hot Dogs." A young man loads boxes into a box van from a shop whose sign reads "*Urgente Express: envia cartas a Estados Unidos.*" Traffic barely moves in spite of the constant horn blaring. Most vehicles are taxis, white Japanese cars with names painted on their windshields ("The Power Race Machine," "El Sailor," "The Grizzly"), Looney Toons characters on their back windows, and many with Yosemite Sam "Back Off" mudflaps behind their rear wheels. Men on motorcycles weave through and past the line of barely moving traffic.

A city bus (retired from its former life as a school bus in a Minnesota) crawls along with the traffic, pumping out diesel exhaust. The driver contributes to the horn honking, his air horn playing a stanza of "*La Cucuracha.*" Under his side window is painted "I've Got What You Don't." Underneath that is a bumper sticker. The sticker's message, like the other messages in this landscape, offers some insight into the contemporary thinking and culture of Honduras. Its message is also, I believe, pertinent to a consideration of forest issues in Honduras. "*Osembramos árboles o 'nos lleva puta'"* ("We better plant some trees or we are fucked").

A few months earlier I was sitting on some boxes of vegetable oil and rice on the back of an oxcart. It was parked in front of a dusty, white adobe building in a high mountain village. The food was a donation from the United States and thusly labeled. The oxcart was built by the same Lenca man who was about to cart the food home. The village was an old indigenous town where life is slow, quiet, and windy

up on top of the *Montaña de Naguaterique*. Another man, who had just signed the food out to the cart owner, stood next to me. We talked about the place, about the surrounding landscape which spread out below us; a patchwork of *dibble*-planted cornfields and forest patches of pines and broadleafed tree species.

Knowing that I was interested in the past and that I had a photo of the place from 1957, Don Leonidas held forth on what had changed in the ensuing half-century. He said that things were better, citing the coming of the road in the 1980s, electricity in 1992, bus service in 2000 – "before that we had only Toyotas" – better health, better houses, better schools. "Life is better here now," he asserted, citing the efforts of foreign groups – NGOs from Ireland, Germany, and the U.S., to name a few – who have helped with this. Pointing to a nearby house made of cement blocks and roofed with sheets of corrugated metal, he said, "There are no more *bajareques* here either. Yes, in the country there are, but not here. It's better."

However, he also asserted that one thing had worsened. "In the 1950s there were more clouds. And more rain. The crops were better. Because there was more rain. Now, because of all the deforestation around here, there are fewer clouds and less rain." He pointed out across the hills below us toward El Salvador to the south. "It's a problem."

Looking at the 1957 photograph of the place that I carried with me and looking out across the same scene, I saw what seemed to be more, not fewer, trees. Though the nearest weather station does indicate a 17% decrease in precipitation between the early 1950s and 1990 (Zuniga Andrade 2000), I am not so certain about

his deforestation assessment. Over the months I was in Honduras, I had essentially this same conversation with many Hondurans, that there was less rain and it was hotter because "look around, we've cut down all of our trees." Indeed, I had expected to find fewer trees as I rephotographed sites first photographed by Robert West in 1957. But finding more, what was I to think? Too, how did I reconcile that with the conversations that told me about how there were no more trees?

What people do with the world they live in is directly related to the ideologies that "inform" and guide them (their culture). The forests and vegetation in Honduras are essentially a cultural landscape. People from different cultures, different times, and with different agendas have long used the country's land to a variety of ends. They have had impacts on practically all of it. Thus, studying the current state of vegetation in Honduras is also to study the people behind it. This is why scholars study landscapes and other artifacts.

This study looks at a half-century of landscape change in Honduras. In short, I found an increase in trees. I expected a decrease. As well as looking at change, I also consider why these changes have occurred. Hondurans have learned to value the abstract "forest". Trees are, to them, important to, often equivalent to, life. The signs are all over the landscape. The words are on their lips. *"No hay bosque, no hay agua. No hay agua, no hay vida."* ("Without forests, there will be no water. Without water, there will be no life.") Has this ideology had an effect on the vegetation landscape of Honduras? The ideology that I see in the Honduran landscape and hear from its people seems to be the same as the ideology that I have

learned here in the United States. It is a form of what we are increasingly saying to each other in classrooms, books and articles, and the larger official discourse of what types of scholarship are seen as important and supported financially and institutionally.

The Honduran landscape has changed. Some of these changes – in vegetation, for instance – may indeed be a result of the changes in the thinking (read: culture) of Hondurans who are espousing a specific ideology, an ideology so "normal" that it appears in places as ordinary, public, and mainstream as bumper stickers on public buses. "*Osembramos árboles o 'nos lleva puta'.*"

Chapter 1
Studying Landscape Change

> *Present … landscapes are not in any way static. They are moving through time. They come from a past about which we understand something, through a present that is bewildering in its diversity and complexity, and will pass to a future which is, thankfully, hidden.* (Roberts 1996: ix)

In 1984, Dennis Cosgrove called attention to a shortcoming in geographic research in that it often failed to focus sufficiently on the continuum of time. "The processes of development and change in the whole are arrested at a particular historical moment so that the areal synthesis can be established and a timeless unity of form imposed" (16). In 1951, Fred Kniffen actually addressed the same issue: "Without the perspective afforded by a knowledge of the developments leading up to it, the present lacks a vital dimension and certainly the future can be projected with little assurance" (241), hence "the geographical scene is likely to be regarded … as fixed and changeless when actually it is constantly in a state of flux" (ibid.).

Though rarely perceived as having pursued similar agendas, these two geographers were calling for researchers to pay attention to change through time and, perhaps more importantly, to the processes behind it. Other geographers have also addressed this issue (for example, see Sauer 1941). The concern is so that the present, and thus potentially the future, can be better understood.

To be sure, plenty of geographers did and do pay attention to change over and through time. Criticisms, in particular contemporary ones, making claims to the

contrary are at best uninformed or, worse, baseless assertions for gymnastically furthering a particular agenda. Though some may have given too much focus to patterns of change rather than the processes behind them, time-depth perspectives have not been absent in geographical research. Some have used a cross-sectional approach to study change, with Derwent Whittlesey's "Sequent Occupance" (1929) and Preston James' "Blackstone Valley" (1929) being two of the perhaps better-known early examples. Sauer and the subsequent Berkeley School (Clark 1954) focused on the impacts of cultural processes over time. All were seeking a time-depth perspective in explaining the surface of the Earth. More recently, others, such as William Cronon's *Changes in the Land* (1983) and Conrad Bahre's *A Legacy of Change* (1991) have contributed to the body of work examining change over time. The addition of more diachronic studies will only add to our discipline's productive efforts to make sense of our complex world.

This study is a study of change. The subject matter is the landscape, the world out there. Landscapes change. So do the cultures that live in and make them (Norton 1989: 74). Such changes can be dramatic, but are often (perhaps more often than not) "incremental" (Doolittle 1984). The importance for understanding change and time probably came into the Berkeley arm of American geography via anthropology, which has tended to see time as continuous rather than as punctuated segments or cross-sections. This is important, especially for this study due to its focus on repeat photography. Contrary to their appearance, cross-sections (the 'then' and 'now') are intended to be (or should be, at least) representative of larger periods. The cross-

sections are best used as a means, not only for seeing what has changed in the two (or more) periods, but for what happened between the periods to cause the change (Norton 1989: 75, 95). The landscape offers a way to look into what has happened.

Landscape in Geography

In 1925, Carl Sauer published "The Morphology of Landscape." This was the cornerstone that brought the landscape concept to American geography. However, the concept has since expanded to include such a diversity of approaches as to seem to justify Richard Hartshorne's (1939) concerns that the concept was too ambiguous to serve as the basis of a logical foundation for geographical inquiry. This ambiguity, though, despite its weaknesses, has also proven to be the strength of the landscape concept as a way for geography to deal with its broad subject, the surface of the Earth. The development of landscape studies in geography has seen plenty of contention. However, the present state of diversity in landscape studies and approaches may be, in large part, what Sauer had in mind in 1925.

Sauer's landscape prescription for geography was based primarily in an attempt to deconstruct the environmental determinism that pervaded American geography at the time (Leighly 1963, Norton 1989). This metanarrative came to American geography in large part from Friedrich Ratzel via Ellen Semple (Leighly 1963). The basic premise was that human behavior is shaped and determined by the environment, an attempt to explain human variations across the surface of the Earth. Based in part on observed (co)variations of phenomena and in part on ethnocentrism,

the approach posited that different biophysical regions (largely climatic) produced different kinds of people. This was used to explain differences in so-called levels of civilization as well as to justify the oppressive behavior and attitudes of Europeans across the globe (Norton 1989). For example, tropical areas produced particular types of people – intellectually slow and lazy. Temperate areas, conversely, encouraged intellectual and industrial stimulation. Though Ratzel has been credited with developing this notion in his *Anthropogeographie* (1891), Semple's 'translation' of his work into her *Influences of the Geographic Environment* (1911) expanded the argument and brought it to American geography. Even so, a reduction of either of these figures, especially Ratzel, to simple environmental determinists probably ignores the complexity and variety of their scholarship.

Soon after his move to Berkeley from Michigan, Sauer penned "The Morphology of Landscape" (1925). Humans, for him, shape the environment rather than vice versa. The environmental setting merely provides various opportunities to do so. He based his work on the work of German geographers (primarily Passarge and Otto Schlüter) and French geographer Paul Vidal de la Blache (West in Anderson 1998, Norton 1989, Livingstone 1992). According to Karl Butzer (2001) this was, in addition to a reaction against environmental determinism, in part a reaction to post World War I anti-German sentiment that he experienced in the Midwest. Drawing largely on two concepts, *landschaft* and *genre de vie*, Sauer focused his approach on human agency and its impact on the biophysical world. Culture, rather than the environment, was the shaping force worthy of study. Despite James Duncan's claim

to the contrary and though his critique may have some merit, little evidence exists that Sauer actually embraced Alfred Kroeber's superorganic concept of culture (Norton 1989).

For Sauer, the landscape was a "naively given section of reality" (1996: 297) or "land shape" (300) that we can observe. The *genre de vie*, or culture, of a group of people served to shape the biophysical aspects of that naively given section, or landscape. Thus, the state of the landscape could be explored through the culture of those who inhabited and shaped it rather than vice versa. Though he acknowledged that few truly 'natural' (non-human influenced) landscapes existed, Sauer conceptually utilized the notion of the transformation of natural landscapes to cultural ones as a way to attempt to better understand what humans do to and with the surface of the Earth.

Though his approach entailed morphological classification, one of the major criticisms of his legacy (Cosgrove 1984), Sauer also recognized and acknowledged the non-scientific 'affective' dimensions of the landscapes that people shape and inhabit. Thus, we cannot understand the state of a landscape or an area without understanding it 'holistically', without "comprehend[ing] land and life in terms of each other" (Bluntschli, quoted in Sauer (1925) 1996: 300). As well, he noted that one of geography's objectives should be to understand the differentiating qualities of space across the surface of the Earth (Sauer 1941), which perhaps anticipated later studies of place and landscape and the development of humanistic geography.

One of the primary legacies of Sauer was the development of cultural geography that sought to differentiate between culture regions based on different *genres de vie*. The primary goal of this was "to seek evidence of logic and pathology revealed in the record of the human use and misuse of the Earth" (Mikesell 1994: 441), a mission that Marvin Mikesell claimed critics have yet to demonstrate a sufficient understanding of (ibid.). This ecologically-concerned landscape approach characterized much of Sauer's work and influence, which culminated in the 1955 conference in honor of George Perkins Marsh, *Man's Role in Changing the Face of the Earth* (published in 1956 under the same name). Nonetheless, other research agendas also emerged from his influence (for example, Kniffen 1965, 1974, Parsons 1961, 1970, West 1948, 1994). As well, as Marie Price and Martin Lewis (1993) pointed out, to reduce Sauer's legacy and the so-called Berkeley tradition to a narrowly focused "traditional" geography ignores the complexity, sophistication, and diversity of the research agendas of those with Berkeley affiliations.

Hartshorne (1939) eschewed the landscape as problematic, going so far as to say that it did not, nor ever did, exist. The term, for him, was too ambiguous and a geography based on it would prove to be too superficial. Thus, he retreated to chorography as a basis for geographical inquiry. Sauer was mostly unconcerned with these criticisms of the landscape, though he did defend against Hartshorne's criticism of the inclusion of temporal perspective in understanding why and how the Earth exists as it does (1941). Though the Sauer-Hartshorne dichotomy is often pointed to

as a major historical rift in the discipline, another rift may have been partly responsible for one of the most important shifts in geography's history.

The quantitative turn reached geography in the 1950s (Livingstone 1992). This shift had reached other disciplines somewhat earlier. One of the figures responsible, at least in part, for this shift was Fred Schaeffer (ibid.). He attacked Hartshorne's regional manifesto in favor of a more scientific geography, a call that was enthusiastically answered by such seminal figures as William Bunge (1962) and David Harvey (1969) (Livingstone 1992). The embracing of 'science' to remake geography resulted in evangelical efforts to form a decidedly spatial science (ibid.). This move resulted in perhaps the greatest tension (in large part, generational) in the discipline. Rather than emphasize the ecological dimensions of humans on and across the Earth (the basis for Sauer's landscape approach), the new approach favored spatial, model-based analysis. However, this mathematical fervor may have inadvertently done as much for the vitality of the landscape concept as anything.

The quantitative push that reached its apex in the late 1960s and 1970s threatened to dehumanize geography. Though many continued the paths begun before the shift (revolution, some call it) (for example, Kniffen, West, Parsons, among many others), mathematical scientific approaches were the most visible (or loudest, at least). The reaction that this fervor engendered eventuated in bringing the landscape concept (refined and expanded) back into clear disciplinary view, resulting in its continued central place since (Rowntree 1996). Figures such as Donald Meinig (1979), David Lowenthal (1968), Pierce Lewis (1976), Edward Relph (1981) and Yi-

Fu Tuan (1977) appeared. By the time of the appearance *of The Interpretation of Ordinary Landscapes* (Meinig 1979), such scholars had begun to demonstrate the complexities of the surface of the Earth. Though others had also expressed the subjective complexities inherent in understanding a human world and its landscapes (Kniffen 1974, Glassie 1975, Richardson 1974), these works illustrated that a geography based on numerical and geometrical models could only talk about a fraction of the human experience in a biophysical world. However, before discussing this development, it is pertinent to back up a few years and introduce an important figure in landscape study and a major influence in this humanized return of the landscape in geography.

The Jacksonian Era

J.B. Jackson founded the magazine *Landscape* in 1951. This semi-popular professional magazine would be the forum wherein he would write prolifically on the American landscape. Whether discussing the origins of "the word itself" or abandoned houses on the U.S. High Plains, Jackson's writing was splendid. With clear prose, he assumed a position somewhere between the west Texas roughneck and the Harvard historian, lamenting both modernization and its criticisms. Whether holding forth on the origins and meanings of the American grass lawn or mythical Optimo, Jackson portrayed the landscape as experienced space. Further, this experienced space is experienced by common people and, thus, worthy of serious attention.

His style – Karl Butzer (2001 class lecture) described him as a "word artist", "the poetic counterpart of Sauer" – allowed him to bring humanity to landscape studies and, through his narratives, attempt to get at how and why landscapes develop, how they are experienced, and how and why they change. For example, in his fictionalized "The Westward MovingHouse" (1953), he linked the larger social, political, and economic forces to the development of the domestic landscapes of different generations of a family. As America spread west and matured, larger forces were manifested in the activities, experiences and, relatedly, the material culture of progressive generations, real human members of society who built, lived in and experienced common landscapes.

The legacy and impact of Jackson both within and without geography, though he himself was not a professionally trained geographer, is great. Meinig (1979) credited him, along with British landscape historian W.G. Hoskins (1970), as being among the most important and influential figures in landscape studies, leaving his mark on scholars as diverse as Carl Sauer, Denis Cosgrove, and Harvard historian John Stilgoe (1982).

A Continuum

To be sure, before the 1979 publication of the Meinig volume, perhaps a somewhat random milestone itself, landscape studies continued to be done. Ecologist May Watts (1957) published the insightful "The Stylish House *or* Fashions as an Ecological Factor" in which, in a fashion similar to Jackson's "The Westward

Moving House", she examines how time and the social changes that it brings are manifested in a changing domestic landscape. This is also similar to, but on a much smaller scale, Jan Broek's (1932) study of landscape change in California's Santa Clara Valley. Watts also later published "Reading the Rooflines of Europe" (1969) in another effort to link human landscapes to their ecological settings. Her work, according to Pierce Lewis (1979), in particular the 1957 piece, has gone somewhat underappreciated in geography.

Others continued following Sauer's legacy and concern that we study the Earth's surface in order to see our impact on it. Christopher Salter's edited volume, *The Cultural Landscape* (1971) did just that, eclectically compiling writings from within geography and without to show the many facets of the landscape and the implications for its study. Sauer's student Fred Kniffen, in Miles Richardson's *The Human Mirror* (1974), explored the implications of the material landscape that had long been his subject focus (1936, 1965). The material landscape, he said, is a product of technology, cultural values and the ecological setting. Thus, these are all manifested within landscape and, as such, should be discernable from it. At an advanced level, such information would be used for 'prediction' for dealing with the future, perhaps showing the influence that Sauer the "moralist" (Leighly 1963: 4)) left on him.

Others embraced this study of material landscape. Richard Francaviglia (1978) studied the material landscape of Mormon America. He showed its standard composition, its distribution and, reminiscent of Whittlesey's "The Impress of

Effective Central Authority Upon Landscape" (1935), the part the Mormon church played in its development. He concluded that this landscape is important and worthy of our attention because, planned or purely "vernacular", it has become part of who Mormons are.

Terry Jordan continued in Kniffen's influential, if underappreciated (Earle 1993), footsteps at the same time that Edward Relph (1981) was humanistically showing how landscapes are made, lived in and thought about. Jordan's *Texas Graveyards* (1982) is a necrogeography that reads and interprets the material landscape. Cultural influences, in this case Southern (Anglo-Afro), German and Mexican, he showed, can be ascertained in the perhaps more resilient landscape of cemeteries. As well, he showed how contemporary influences are changing these landscapes. As social values and forces are inherent in the material culture that cemeteries offer, the contemporary changes that he described may point to an arena for future research. Jordan's *American Log Buildings* (1985) also contributed, illustrating how the material landscape can be read for insight into the diffusion of traits and their human counterparts. These are important to understand, as contemporary situations have influential historical roots that may go far to explaining them.

Ordinary Landscapes

Meinig's edited volume *The Interpretation of Ordinary Landscapes* (1979) is important because it collectively explored many of the "affective" aspects of

landscape. In it, Marwyn Samuels stressed the importance of understanding the "authors" of landscape. Yi-Fu Tuan, as in his previous *Space and Place* (1977), showed that we all experience different spaces and places differently and, thus, that any one place or landscape is subject to a variety of different perceptions and experiences by different people (including scholars). David Lowenthal, preceding Kirk Savage's (1997) recent work, echoed others (Richardson 1974, Rapoport 1982), in showing that the landscape is an active agent. We make it and it returns the favor. Lewis, calling the cultural landscape "our unwitting biography" (12), pointed to ways that we can "read" the landscape like a book. These "axioms" are necessary, he claimed, because, though the landscape can be read, it was not intended to be so (though Richardson (1994) pointed that this overlooks the communicative aspect of landscape).

Recently an edited volume, situated within the more diverse and complex research agendas whose development will be discussed next, *Understanding Ordinary Landscapes* (1997) built on and added to the currents that the Meinig volume developed. Setting up a framework for study of the cultural landscape with chapters by scholars as diverse as Cosgrove and Zelinsky, the volume added to efforts to understand the many facets of common American landscapes such as ethnic expression and the expression of power relationships. It also has a bias in favor of the urban to make up for the rural bias that some accused geography of possessing for so long (Groth 1997).

Things Change

By the early 1980s and the 'evening out' of the quantitative fervor that had swept the discipline, a significant body of landscape literature had developed in geography. Some of it was directly descended from Sauer's influence at Berkeley. Others drew on additional influences. As well, Sauer's influence reached far beyond the scope of landscape studies, as he did not confine himself:

> I have the idiosyncrasy that once having written something, I do not refer to it again myself, except to refresh my mind as to statements of fact … I thus escape from commitment to previous opinions and conclusions … and am therefore not obliged to defend my past self. (Letter to R.H. Kinvig, quoted in Leighly 1976).

Others followed his student Kniffen in the study of folk material culture. Still others, such as contributors to the Meinig volume, had developed the concept in ways that paid attention to how landscapes are experienced and thought about, as well as how landscapes are influential agents in human experience. Another related body of literature also began to develop in geography at this time. This work has since had a great impact on geography, landscape studies, and, from its larger theoretical foundations, practically all scholarship. This discussion of post-structural and post-modern developments, though, will be limited to key works in the landscape literature.

As James Duncan's 1980 "The Superorganic in American Cultural Geography" marks a watershed in the discipline, Cosgrove's *Social Formation and Symbolic Landscape* (1984) had great impact on landscape studies. Criticizing

geography (somewhat unfairly and incorrectly, I should add) for using the landscape concept without properly theorizing it, Cosgrove's work was seminal in bringing to landscape studies and geography a new approach. The subsequent development of the approach and body of scholarship known by many as the "new cultural geography" has left its mark on the discipline. The result has been an even greater blossoming of the subject matter and methodologies, as well as a greater abundance of critical discourse. This generation of scholarship has expanded the discipline but, due to its evangelical "drop everything and follow me" approach (Mikesell 1994: 443) that many see as overly critical and counterproductive (Price and Lewis 1993), also created a general rift in the discipline that has yet to properly heal (Duncan 1994).

Cosgrove's work sought primarily to theorize the concept of landscape or the "landscape idea" (1984: 1). For him, the landscape is "a way of seeing" (1) the world, a conceptual perspective on the world (though the German meaning is "small region"). Pointing, like Jackson (1984), to the European origins of the word, Cosgrove showed the development of the concept of landscape from the work and influence of Dutch landscape painters. Thus, the landscape was a picture of a scene of a portion of the Earth's surface. This 'framing and representation' of landscape influenced how actual physical landscapes were seen, perceived and represented. This, he claimed, is the basis of the landscape concept in geography. Representations of landscape perceptions (ways of seeing), he showed, served to further influence how landscape is perceived. Subsequently, examining changes in the European

landscape during the transition from feudalism to capitalism, this influences how the surface of the Earth is organized and used. However, Butzer's (1990) thorough investigation of this change in a specific area of Spain may offer a different perspective on the shift from feudalism and be an interesting companion to Cosgrove's study. Cosgrove's primary contribution, though, was to point out that the way the world is perceived and represented affects how it is organized and used.

Cosgrove's work brought change to landscape studies and geography. New currents and expansions, informed by and situated within developments in social theory and Marxism, followed. These studies have attempted more in-depth analyses of the human world, drawing on a variety of methods and theories, such as anthropologist Clifford Geertz and interpretation based on 'thick description' (1973) and textual deconstruction based on works by figures such as Roland Barthes (1977, 1979). The concerns and focus of much of this work was social process and issues of social equity, best exemplified in the title of David Harvey's *Social Justice and the City* (1973). The breadth and variety of landscape studies that have developed since probably makes it more pertinent to discuss these developments thematically rather than chronologically.

One year before Cosgrove's major work, Cronon published *Changes in the Land* (1983) which attempted to explain environmental history in terms of the ideologies that inform the actions of those who inhabit and shape land. Thus, he produced an environmental history of New England that examined the ecological changes that resulted from the European settlement of New England. These changes,

he showed, were rooted in the different perspectives that Europeans and Native Americans had on land. Unlike the Indians, Europeans increasingly saw land as a productive commodity. This capitalist perspective led to different patterns of land use (including, importantly, different manners of appropriation and ownership) which in turn affected changes in the ecological situation.

Cronon's 'landscape-as-ecological artifact' approach continued and extended the Sauer tradition and has continued to influence studies both within and without geography (see Cronon 1995). Other studies that fit into this approach are Bahre (1991), a response to Hastings' and Turner's work on ecological change in the U.S. Southwest (1969), Roberts' archaeological work (1987) and contributors to Turner's *The Earth as Transformed by Human Action* (1990). Recently, Gordon (2001) has added to this body of work with his industrial ecological investigation of Salisbury, Connecticut, showing how people's cultural perspectives on resource use lead to distinct manifestations in the ecological landscape.

Sauer's legacy sent many geographers out into the countryside. Rural areas were preferred, not only due to what Mathewson has termed an "anti-modernist" impulse (1987), but also probably because most of the Earth's ecological setting is rural. Urban areas are important though and so have indeed gained more visibility in landscape scholarship (Groth and Bressi 1997). In Conzen's edited *The Making of the American Landscape* (1990), Meyer integrated industrialization in America with its urban components and Muller more directly investigated how distinct urban forms developed in North America. Daniel Arreola and James Curtis (1993) investigated the

material culture of 18 cities in the Mexican borderlands, showing that the material culture of urban areas can provide insight into both the character of the cities and the identity of those who live in them. Other studies have sought to incorporate more literary, critical social, and Marxist theory into understanding urban landscapes, such as Caroline Mills' look at the meanings of inner-city gentrification (1993). A recent addition to this body of work is Harvey's *Spaces of Hope* (2000) which analyzed the 'new urbanism' or 'neotraditional town planning (best exemplified by Duaney, Plater-Zyberk and Speck 2000). Harvey criticized this nostalgic agenda to (re)build cities for perpetuating and even encouraging many social disparities, such as ethnic and class exclusion.

Perhaps the greatest area of growth in landscape studies has been in examinations of social processes, an agenda that came with post-structuralist and post-modernist approaches (see Barnes and Gregory 1997). Such studies point out that these processes are manifested in landscapes and the ways in which landscapes are perceived and described (Cosgrove and Daniels 1988). These bodies of literature are related, as the embodiment of social process in the landscape is inherently tied to how such landscapes are perceived (Spirn 1998, Duncan 1990). Studies of landscape perception include Rees (1978), as well as Lowenthal (1979) and Savage (1997), who both examined the tensions inherent in monuments in the landscape and the memories of the past that are both embodied by and built by them.

Though others earlier wrote about production, meaning and the communicative aspects of landscape (Wagner 1974), more recent studies have

expanded this arena of research. Many of these studies are situated within methodologies, such as deconstruction and interpretation, brought to prominence in the development of post-structuralism and post-modernism (Duncan 1994, Cosgrove and Daniels 1988). Duncan's *The City as Text* (1990), shows that landscapes are read and interpreted as text by those who inhabit them, as well as by those who study them (Lewis 1976, Cosgrove 1984). However, I find that his criticism of material culture scholarship (read: the Berkeley School) as "object fetishism" (1990: 11) was misguided. As per Gade (Price and Lewis 1993), it was the integration of material and non-material culture that most interested the Berkeley School. Thus the material culture studies tradition associated with the Berkeley School was more complex and aware than Duncan implied. Calling it "object fetishism" simply demonstrated that he lacked a clear understanding of the agenda. Nonetheless, Duncan's work showed how power relationships can be built into landscapes so as to produce and perpetuate social structures and categories. Other contributions to this arena are Jennifer Price's (1999) insights into how 'nature' is perceived and, hence, reflected in modern America, Kay Anderson's (1987) study of Vancouver's Chinatown and the racial categories built into its landscape, and Don Mitchell's more recent (1996) study of migrant farm workers in the California landscape.

In what is essentially a labor history, Mitchell shows that reading the material landscape may often miss the processes (and people) that are inherent its construction and maintenance. From this point of departure, he investigates the role and invisibility of migrant farm workers in the making of the California agricultural

landscape. He points out that earlier geography (among other disciplines) ignored the labor and lives that went into making the landscape appear as it does. Thus, James Parsons' (1986) description of the San Joaquin Valley landscape, for Mitchell, comes up short as it describes without examining how the landscape came to be what it is. However, the criticism here (found more directly in Cosgrove (1984)) that so-called 'traditional' geography, especially that associated with the Berkeley School, was more interested in description than in process is probably inaccurate. Though, to be sure, many geographers have engaged in mere description, to criticize their predecessors thusly shows perhaps a lack of sophistication in understanding this large body of work (Mikesell 1994). Mitchell's contribution, though, did illustrate that reading the material landscape requires thorough investigation as the land may 'lie'.

An important relatively new area of research that has entered geography with developments in and incorporation of social theory is feminism. Gillian Rose (1993) was perhaps the most voiciferous (if not overstated) in bringing this agenda into the discipline. Mikesell (1994) proclaimed this to be one of the most important and challenging research agendas in recent and future geographic research. The feminist approach, building in large part on post-structuralism and post-modernism and their questioning of metanarratives and objectivity, seeks to examine the ways in which "masculine" ways of approaching, writing about, and living in the world have limited both our understanding of the world and the lives of women within it. Important works that contribute to this body of work are Vera Norwood's and Janice Monk's *The Desert Is No Lady* (1987), which contributes to a better understanding of both

artistic representation and feminism, and the more recent *Landscapes of the New West* (Comer 1999), which investigates women writers and their view of wilderness as a masculinist construction and discourse.

Contributions and Expansions

What all of these works and others – see especially the two edited volumes, Barnes and Gregory (1997) and Duncan and Ley (1993), which contribute to these expanded research regimes – bring to geography and landscape studies are attempts at more complete understandings of the social processes that go into (and are manifested in and perpetuated by) the making of the physical material landscapes in which we live. The expansion of available methodologies and theoretical approaches offered by, for example, Marxist analysis and feminist deconstruction offers a far more complex set of tools with which to approach understanding and, relatedly, future construction, of landscapes. As well, such approaches offer more complex ways to understand social processes and how these are manifested in (or hidden from) material form. This is important.

Sauer's landscape-as-ecological artifact approach, as well as others such as studies of material culture and diffusion, utilized primarily the methods of empirical field observation combined with the use of historical archives. This is still, to my mind, one of the most valuable approaches to landscape studies, despite the inherent problems of objectivity that some have pointed out (Cosgrove 1984, Rose 1993). Butzer (2000) has recently demonstrated the value and utility of this approach by

examining the development of house types in colonial Mexico. What he showed was that rather than simple diffusion, technologies both Spanish and Indian were shared by members of both groups to develop new forms. Jordan-Bychkov and Bychkova-Jordan (2001) have likewise demonstrated the utility of archival materials and field experience in understanding the relationships between people and the land they live on (land and life) in Siberia.

However, the addition of other approaches to landscape studies – probably a meeting of what might be called cultural and social geography (Norton 1989) – have indeed served to expand our understandings of how this material world is seen and experienced, what forces and relationships go into its construction (social and material), and how it shapes and guides us (and vice-versa). Too, landscape's presence in other academic divisions, though by no means new (Richardson 1974, Jackson 1984, Wagstaff 1987), has grown, with one example being Hirsch's and O'Hanlon's *The Anthropology of Landscape* (1995). Though they take exception to Cosgrove's and Daniels' definition of landscape as merely a "way of seeing", this volume does take up some of the same issues, such as the insider-outsider dichotomy, explored by many of the "new cultural geographers".

Though the term and concept has been exposed to a barrage of investigation, use, and interpretation – much like other concepts such as nature and culture (Williams 1983, Mitchell 1995, Matthews 2000) – landscape remains both a useful concept and an important subject. Its ambiguity, espoused by some to be its weakness, may also be one of its strengths (Rowntree 1996, Spirn 1998). The human

world that we inhabit and seek to understand is simply too multifarious and complex (too messy) to fit into any one paradigm or theoretical situation, though others, such as Mitchell's (1995) reductionist perspective, may argue to the contrary. Thus, by being ambiguous, the landscape concept allows us multiple interpretations and, from these, multiple approaches from which to better explain the world we inhabit. As a "structured portion of the Earth" (Mitchell 1996: 2) situated within a variety of social contexts and perceptive regimes – the 'cultural stuff' (Royce 1982) that characterizes human experience, – landscape is "… the visual context of our lives. It has to matter to us because our social identity, perhaps even our personal identity is bound up with it" (Relph 1981: 57). As one of the most fertile areas of research for integrating the social and the ecological, landscape-as-concept continues to offer opportunities for our ongoing endeavor to describe and interpret the surface of the world we make and live in.

In my work here, I utilize primarily the landscape-as-ecological artifact approach, though I maintain throughout that this ecological artifact is also experienced space, laden with meanings, both guiding and reflecting the experiences of those in it. Thus, one reason for the long review of the landscape literature is to remind (both the reader and myself) that the ecological artifact of the landscape is as much artifact as ecology. The artifact, a link between human values and imagination, is a sort of "human mirror", material culture that is, at its heart, "the final objectification of intrinsic hopes" (Richardson 1974: 12).

For the landscape, I would only remove from Richardson's description the word 'final', as the landscape is never so. Rather, in concert with the *habitus* (Bourdieu 1971) of those who constantly live in and construct it, the landscape is being steadily improvised, constantly changing. At the base of an entire sub-discipline of geography and other scholarship are efforts to understand the directions of this change and its implications for the future, for our future. None laid it out better than Sauer in "The Agency of Man on the Earth" from *Man's Role in Changing the Face of the Earth* (Thomas 1956). Here he contemplated modernity and modern obsession with consumption and production based on resource extraction and use. Most importantly, perhaps expressing the philosophy that guided his work and his legacy, he contemplated the potential impacts and consequences of this.

> What we need more perhaps is an ethic and aesthetic under which man, practicing the qualities of prudence and moderation, may indeed pass on to posterity a good earth (68).

This is the "theoretical" situation of my work.

Chapter 2
Geography and Vegetation Change

Major Branches

The implementation of the landscape concept in American geography and an increased attention to and interest in the human dimensions of environmental change occurred, not coincidentally, together. Following the "Marsh Road" – ultimately that of Buffon (see Glacken 1960) and Humboldt (see Nicolson 1987), – Sauer's attention, beginning well before "Morphology" with his looking into the destruction of the Michigan pine barrens, turned to the impact of people on the biophysical world. Others shared his concern. This approach began to slowly blossom, helping with the foundation for a later environmental movements, as well as, in part, for the development of cultural ecology (Butzer 1990). The two arenas of inquiry or concern – landscape and human-environment relationships – continue to overlap, though perhaps only at the edges. Nonetheless, a long tradition in geography of studying the human-biophysical interface in the landscape, at least as old as Humboldt, remains vibrant today (for example, Robbins 2001).

As part of this body of concern, many geographers have placed their attention on studying vegetation and vegetation change. The study of plants and vegetation in geography tends very generally to three traditions or approaches.

The first approach – the cultural-historical – is taken by those who look at vegetation change and human landscapes at local or regional scales, a blend of natural science, history and anthropology. It could perhaps be called "cultural

biogeography". Some examples of this approach are Clarissa Kimber's (1988) historical study of vegetation change on the island of Martinique, H.C. Darby's (1956) historical look at woodland clearing in Europe, Carl Johannessen's (1959) study of Honduran savannas, David Harris' (1965) study of the outer Leeward Islands in the West Indies, and William Denevan's (1961) study of Nicaragua's upland pine forests, a classic and perhaps still one of the best. As well, a collection of repeat photography studies, of the U.S. Southwest (Hastings and Turner 1969, Humphrey 1987, Bahre 1991), and otherwise (Veblen and Lorenz 1991), contribute to this body of work. Paul Robbins' (2001) recent study of vegetation change in India continues the tradition. These works use historical archives, ecology, and anthropology to examine contemporary ecological conditions in specific areas and the changes, physical and cultural, that have led to these conditions. This tradition, I hope, continues here.

The second approach or tradition among geographers who study vegetation is biogeography. Though of a different focus and perhaps scale than studying vegetation change in the landscape, biogeography – " the evaluation of distribution areas (ranges) by means of clarification of the structure, function, history, and indicator significance of propagation areas" (Muller 1980: 1) – is a primary arena of geographic research on vegetation. Biogeography is generally practiced at a broad scale, looking at distributions of plants, plant communities and plant associations over large swaths of both time and space.

One large and particularly enlightening arena of biogeographic research is palynology. Palynologists read pollen records that are preserved in sediment layers, genearally taken from the anaerobic environments at the bottoms of lakes. The pollen grains that are preserved are taken to give a general picture of the surrounding area's vegetation through time. This picture can be used to determine both earlier climatic and cultural conditions. Some examples, particularly relevant to this project, are Sally Horn's (1996) work in Costa Rica and Rice, Rice, and Deevey's (1985) work in the Guatemala Peten. Horn and Lisa Northrop (1996), looking at the patterns of land cover and presumed land use and population presence in Costa Rica through pollen analysis, showed that indeed large areas of what is now lowland rainforest had much earlier (2500-1300 BP) been under significant and increasing agricultural production, and that the areas were only abandoned just before or upon the arrival of the Spaniards. Rice, Rice, and Deevey (1985) showed a similar pattern for large swaths of the Peten rainforest, an area that, though heavily cleared for agriculture 2000 years ago, now is pointed to as a biodiversity hotspot of tropical rainforest.

The implications of this work are great and mostly obvious. First, we know far less than we assume about the ecological past, though we are learning. Second, our assumptions about pre-contact New World ecological settings, what Denevan (1992) called 'the pristine myth', have needed some reworking. Third, though our environmental concerns are probably well-placed, our fears that change is unidirectional and that the environment is not so resilient can also benefit from some rethinking. Biogeography, by offering long-term perspectives on ecological change,

is helping with this. Other vegetationally-focused geographical research traditions are likewise illuminating ecological complexities.

The third general approach to vegetation studies in geography is "landscape ecology" (Forman and Godron 1986). This research agenda, primarily though not exclusively focused on vegetation, is more ecological in focus than traditional studies of vegetation change and is typically more oriented toward process and ecological complexity than both biogeography and the cultural-historical approach. However, this should not be misconstrued to mean that biogeographers, among others, do not study ecological complexity and processes. "Landscape ecology explores how a heterogeneous combination of ecosystems…is structured, functions, and changes" (Forman and Godron 1986: vii). The approach is perhaps a meeting of systems-based ecology and the broader landscape approach of geography and landscape architecture. It benefits ecological and geographical approaches by bringing each to the other, offering detailed explorations of the biological complexities of large expanses of our lived-in world. Landscape ecology, for the most part interdisciplinary, contributes strongly to discussions on conservation, particularly those on biological corridors, forest patch dynamics and the like. Though the approach entails understanding and studying biological complexities, it places its ecological perspective within the broader set of perspectives on landscape, making it perhaps a more globally relevant way of doing natural science.

Roots

All three of these geographical approaches to the study of vegetation share historical roots. Briefly pointing this out is pertinent because it illustrates the continuum and shared concerns that guide the research agendas of so many. As well, it perhaps better situates this study within a larger tradition of studying human-environment relationships and their impacts and potentials.

Following Immanuel Kant, by the 1760s some thinkers were beginning to see biology geographically. In the increasing confusion of Western science's farther-reaching explorations of the world and the growing body of knowledge that came with it, pattern and process (or cause) became unified in part by linking life form to place[1]. Johann Forster was a key figure in this development (Browne 1983). Another was K.L. Willdenow, who helped develop a regional and distributional perspective in the study of plants and organisms. He is, thus, seen as the father of plant geography by some (Larson 1986, Nicolson 1987). He was also the mentor of an important figure in geography (bio- and otherwise).

Alexander von Humboldt, gentleman scholar who both read and traveled voraciously, is also proclaimed as a father of biogeography (even simply modern geography) (Larson 1986). Humboldt deserves mention because, not only did he

[1] Not coincidentally, these attempts to explain variations in pattern were extended to human groups, eventuating in the development of geography's dark side metanarrative, environmental determinism. Environmental determinism simply attempted to explain variations among human groups according to other observable apparent co-variables, namely climate. However, its underlying assumption was that other groups were less productive, less creative, and less intelligent than we "civilized" temperate dwellers and this must have been because of climate. Fortunately we moved beyond this, though reactions against it perhaps caused us to ignore the environment's role in human affairs for some time.

contribute massively to scholarly geography, he contributed massively to the study of plants and ecology in geographic terms. He integrated and expanded the work of others, such as Ramond's 1787 study of altitudinal zonation (Larson 1986). His broad geographic perspective helped to change the study of plants to the study of vegetation (Castrillon 1992). Studying distributions was a way to understand why and how life forms existed, thus offering insight into what he termed the "cosmos" (Humboldt 1859, George 1993). In fact, concerning plant geography, Humboldt was aware of this shift and actually claimed to have been single-handedly creating and important science (Browne 1983). Thus he is a keystone figure in the history of biogeography. His influence and legacy, though, reach much farther.

Though this study and most that inform it are not of the scope and perspective of mainstream biogeography, they share with it Humboldt's legacy. All have an interest in understanding the ecological conditions of the Earth, past, present, and/or future. Humboldt's importance came from the inferences he was able to draw from his observations (Mathewson 1986, Nicolson 1987). His perspective on plants and landscape change was also closer looking and, like the landscape ecologist, considered cause and process in pattern. For example, he looked into the lowering level of Lake Tacarigua (Lake Valencia) in the Aragua Valley in Venezuela, considering the impacts of increased land clearing nearby and subsequent changes in local climate in its cause (Marsh 1965: 175-176). Though his conclusions were incorrect, the inquiry here shows his interest in understanding the complex series of relationships that exist between vegetation, climate, and humans, an interest that this

study and those informing it share. A later, perhaps more direct mentor in this body of work had a particularly strong perspective on the human role in this set of relationships.

George Perkins Marsh set forth his ideas on the impacts of humans on the physical Earth in *Man and Nature; or, Physical Geography as Modified by Human Action* (1864). His concern was with human impact on the environment. Though his remained an anthropocentric view, concerned with human modifications to the physical world that would be least detrimental (thus improving the human experience), he was perhaps the penultimate figure in the conservation movement that followed him and the subsequent environmental movement(s) (Lowenthal 1958). His book, contrasting or countering the progressive industrialism of modern society, pointed out what humans were doing to their physical habitat that stood or stands to be potentially harmful in the future. More, he provided inspiration for a number of future writers and scholars, many of whom were and are geographers. His academic inspiration culminated in the organization of the 1955 international symposium *Man's Role in Changing the Face of the Earth*, published under the same title in 1956.

Despite a title that may anger some feminists (very much a product of its time), *Man's Role in Changing the Face of the Earth* has served and continues to serve as inspiration for an entire collection of scholars. In introductory chapters of numerous books, authors both give credit to the volume and situate their own work within its body of concern. In the nearly 1200 page volume, examinations of a variety of aspects of the biophysical world and human impact upon it provide a

multifaceted body of investigation or concern that is perhaps best described by Sauer's contribution, "The Agency of Man on the Earth". In this chapter, he outlined a general history of human impacts on and interactions with the biophysical world and then cautioned heartily against the overexploitation that he saw as inherent in an increasingly consumption-obsessed industrial/capitalist society. He finished with a plea for what would now be called "wise use" (see p. 22).

Since then, studying landscapes of ecological change have made up a significant and growing body of academic research. Rather than continue to outline this historically, I would simply like to point to the relevance and importance of this arena of research. The reasons for studying landscapes of vegetation change are numerous and, for many, self-evident. In 1990, Cambridge University Press published *The Earth As Transformed by Human Action* (Turner et al 1990). This volume, perhaps a modern update and supplement to *Man's Role in Changing the Face of the Earth* (1956), maintained the theme of human-environment interactions and consequences with a focus outlined in the subtitle, *Global and Regional Changes in the Biosphere Over the Past 300 Years*. It is also, like the *Man's Role* volume, an effort to synthesize a large collection of research and different research agendas spanning many years to show the impact of humans on the Earth. This is perhaps geography's best and most consistent theme. As pointed out earlier, even Sauer's call to classify cultural landscapes and to outline culture regions based on collections of traits had this larger agenda behind it.

Understanding our impacts on the environments that sustain us is important. Understanding the complexities of these environmental settings and human behavior both with and within them is key to any good understanding of impacts and their potentials (good or bad). Geographers have long made this an important agenda. They have showed how humans change environments. They have showed the resilience of the environment. They have showed the complexities of human groups and human decision processes. They have showed the complexities of the biophysical world. They have showed the complexities of our interactions with the non-human world that sustains us, and vice-versa. Studying vegetation change fits here because vegetation is linked directly to our survival. It is also the part of the biophysical world that we most easily (even necessarily) change. Vegetation, and relatedly soil erosion, are functions ultimately of climate. Understanding the link between our interactions with vegetation and their impacts on erosion (and on other biophysical processes) (Thornes 1987) is increasingly improving. A newer agenda is to understand the potential of these interactions to change climatic conditions.

In an age of rapidly increasing resource control and consumption, the implications of the human-environment interactions behind our consumption stand to be huge. In particular, if we have the capacity to change climate, partly through our interactions with vegetation (which we may or may not), we need to understand what our impacts are, what the complexities of the biophysical world are, and we need to do this is distinct specific areas and settings on a global scale. Further, and perhaps most importantly, we need to ascertain what impacts different use and consumption

agendas or ideologies have. To do this, rather than start with the ideology and move outward with assumptions of what should happen, we should observe the actual world out there and try to best understand what human actions, interactions, and ideologies behind them have led to the conditions that we observe. This study, by observing changes in the landscape of a particular part of the world and trying to ascertain the forces behind it, tries to contribute to this effort.

Chapter 3
Forest Issues in the American Tropics

The Development of a Perspective

People have always sought out information about foreign and interesting places. Foreigners have long been running around the American tropics, learning, living, sometimes exploiting. The late 1800s and early 1900s saw a proliferation of scientific explorers there, increasingly adding to the body of knowledge of the area, though many of them carried specific agendas. With the post-WWII prosperity of the United States and Europe, we began to send more people and resources into such areas. Some of this was under the auspices of very specific ideologically based agendas. Some of it was under the auspices of "development", also ideologically based and tied to a variety of agendas. Some of it was simply to satisfy scientific curiosity, though these endeavors were often supported by fulfilling the research wishes of larger concerns (for example, see Davis 1996 on the fieldwork of Richard Schultes).

As the Western World neared victory in the Cold War, interactions and involvement in the American tropics, among other places, increased. Much of this involvement was underhanded, ugly, and simply regrettable. However, the period also saw a proliferation of scientists who, in concert with a growing environmental movement in the Western World, began to call attention to the ecology of the area, as well as to some perceived ecological problems (for example, see Evans 1999: 15-71

and Parsons 1971 and 1975). One of these problems was the loss of forest cover, or deforestation.

As the second half of the twentieth century progressed, populations boomed throughout the undeveloped world. Consequently, more land was being used for subsistence. As well, economic systems were guiding the expansion of agricultural production. In much of tropical America, coffee, then bananas, and then cattle had compelled people to clear forest so they could engage in or expand production (see Evans 1999: 35-38). With a growing global post-war economy, these productions were expanding rapidly. In other places, political agendas were promoting the clearing and settling of new land, for example, in the Brazilian Amazon (see Hecht and Cockburn 1990). All of these endeavors were removing and threatening forests. Concerned parties began to call attention to this.

As attention was being drawn toward decreasing forestlands in the tropics, other scientists began to warn that the Earth's atmosphere seemed to be warming up (Abrahamson 1989, Schneider 1989). Was this from things humans were doing? The deforestation people pointed out that forests mediated climatic processes by processing and storing carbon, among other things. If indeed the greenhouse effect was occurring in concert with climate change, forests were necessary for a balance and consequently should not be cut down. Bullseye.

Some of the deforestation that began to receive such attention was occurring in areas of tropical rainforests. Tropical rainforests are proclaimed as home to the greatest biodiversity on the Earth's surface. Some figure that more than half of all the

Earth's species inhabits tropical rainforest habitats (Wilson 1989). Consequently, biologists and ecologists, as they learned more about such places, began to express concern over species extinctions and losses of biodiversity that came with deforestation of such places. Combined with the enormous and rapid nutrient cycling of rainforests and their capacity or potential to mediate climatic processes, the biodiversity loss issue catapulted the tropical rainforest to the forefront of both scholarly work and conservation efforts.

As the Cold War ended and a renewed environmental awareness movement gained steam, conservation activities moved increasingly into the public spotlight. Various organizations began to solicit support and money from politicians, organizations, and the public at large. The Cold War was over. The public enemies for many became poverty and environmental destruction. Non-governmental organization operations exploded throughout the world (see Bebbington 1993). Many of these were and are conservation-based. As the tropical rainforest was important for mediating the impending doom of both climate change and species loss, it became a sort of poster child for many conservation efforts (see Vandermeer and Perfecto 1995). Though other habitats were disappearing just as quickly, the rainforest got the attention. That many remaining tropical rainforest areas were also home to groups of indigenous people – 'others' – surely didn't hurt (see Neitschmann 1993). We had, after all, just recently before stopped killing and started venerating our own indigenous people. Thus, the public sentiment that is necessarily tied to the political and financial support for such endeavors began to flourish. Masses of research

projects were funded to learn about and protect forestlands in the tropics, primarily rainforests. These research projects have contributed immensely to bodies of knowledge in a variety of arenas, such as biology, ecology, geography, and anthropology among others. They continue to do so.

However, this focus has also led to the sort of stereotyped vision of the American tropics mentioned earlier. People on the streets in the developed world speak assertively about problems with tropical deforestation and rainforests. People on the streets in Latin America do too. Information is being diffused from the academic arena into the public one. One pertinent example may illustrate this.

I took with me during my fieldwork the 1997 edition of the Lonely Planet guidebook, *Central America on a Shoestring* (Keller et al 1997). Many who travel and who spend extended periods of time away use such guidebooks for a variety of information. Some use them for all of their information. Others use them only for logistical information, such as where to find the bus to Azacualpa. These travel guides take information from actual on-the-ground research, from public documents such as phonebooks and brochures, and from scholarly work that deals with the region. This information is disseminated, then, to a wider audience.

On page 22 of the Central America guide, in the introductory "Facts About Central America" section and just following general introductions to the history, geography, geology, and climate of the region, appears the subsection "Ecology and Environment: Deforestation in Central America". It begins, "[d]eforestation is happening at such a rate that most of the world's tropical forests will have

disappeared by early in the 21st century" (22). The book then explains how Central America has gone from 60% forested in 1950 to 30% in 1990, moving to explain how the "incredible array of plants and animals [in the tropical rainforest] cannot exist unless the forest they inhabit is protected" (22). The section continues then to focus exclusively on tropical rainforest environments, inserting some general information about parks and ecotourism development. Overall, this "Deforestation in Central America" section gets 112 lines of text. The next "Other Environmental Issues" section, the only other under "Ecology and Environment", gets only 18.

So what we are seeing is the dissemination of scholarly information into the public arena. Being publicized or popularized, the issues, as Wendell Berry (2002) pointed out, become oversimplified. As well, they become points of focus. Deforestation in Central America turns into Central America is deforestation. The public discourse both educates us and affects how we see and think. We now expect to find deforestation throughout Central America and the rest of the American tropics. Further, less conscious, we do not expect to find anywhere in Central America more trees. Our thinking has become oversimplified.

This discussion is not to derogate research or public concern with deforestation, climate change, and rainforests. Such concerns are important and valid. To be sure, deforestation is occurring throughout much of the American tropics, including Honduras. I have seen it. Rainforest environments have indeed been reduced to a fraction of what they were a few short years ago. Climate change,

though perhaps less well understood, is a concern to us all. Such research and public education agendas should be continued and furthered.

This discussion is to point out how knowledge and its production and dissemination turn to perception and focus. When I went to rephotograph Robert West's photographs, I indeed expected to find fewer trees or the deforestation that I had learned about and seen firsthand in a variety of settings in Latin America. This expectation came from somewhere.

Trees and Forests in Honduras

A more specific understanding of forest and ecology issues and in Honduras is pertinent here. What is known about the state of things in Honduras?

In the 1950s, the first concepts of so-called "professional forest management" arrived in Honduras, essentially directly from the U.S. under the auspices of the Food and Agriculture Organization (FAO) and United States Agency for International Development (USAID) (AFE-COHDEFOR 1996: 88-89). Professional Honduran foresters came to universities in the U.S. to be educated in the field. Like Costa Rica, Honduras' conservation movement, then, can be linked directly to U.S. ideology and money (see Evans 2000). Unlike Costa Rica, Honduras never accomplished quite as much. For a legislative history of the development of the forestry sub-sector in Honduras, see AFE-COHDEFOR (1996), pp. 94-95). The forestry school, *La Escuela Nacional de Ciencias Forestales* (ESNACIFOR) was founded in 1969 to promote and expand a professionalized forestry sub-sector (ibid.: 127). In 1971, the

Ley Forestal introduced ideas of multiple use, sustainability, and conservation (Sandoval 2000: 277). In 1974, the same year that Hurricane Fifi reeked havoc in the country, Honduras formed the *Corporacion Hondurena de Desarollo Forestal* (COHDEFOR). This is a benchmark in the evolution of forest concerns, and ultimately of conservation concerns, in Honduras as told by Sandoval (2000) and by COHDEFOR itself (1996).

COHDEFOR was formed with the economic and professional assistance of Germany, the United States, and the United Nations Program for Development (AFE-COHDEFOR 1996: 39). At first, the organization focused on organizing and managing timber resources. Reforestation and protection were not really part of the operation. As the country was developing and modernizing its economy, this was perhaps natural. Attention mostly went to industrialization and commercialization of the country's forests. Little went to issues of biodiversity, concerns with declining broadleaf forest, and the like.

Eventually, though, toward the late 1980s, a larger ecological movement began to take hold. Interest in conservation and protection of resources, in biodiversity and ecosystem management began to gain strength. Reforestation began to receive attention, as did the formation of protected areas, causing approximately 24% of the country to be eventually put under a variety of forms of protected status (Sandoval 2000: 279, AFE-COHDEFOR 1996: 150-153). Even so, at the beginning of the 1990s, the twenty years that saw the growth of concerns with forests also saw a

net loss of forest cover, practically all of it broadleaf forest (Sandoval 2000: 279). Pine forest cover remained essentially unchanged.

With the neoliberal economic restructuring of the 1990s, COHDEFOR received control over a significant portion of Honduras' land. The organization now essentially controlled state land and maintained a certain authority over private forest use as well. What particularly marks this period is the global coordination of work on environmental issues. Following the Brundtland Commission report on sustainability, Honduras formed the *Secretaria de Estado en el Despacho del Ambiente* in 1993. In the same year, the Congress passed laws that, officially at least, assured the protection of the environment and guaranteed that forests would be protected, managed, and, if need be, replanted, formally 'concretizing' the growing global preoccupation with the environment (ibid.: 280-284). Though the forest sector states that "*La Ley de Incentivos a la Reforestación, Forestación y Protección del Bosque no ofrece al marco adecuado ni tendra un impacto positivo en los procesos de reforestacion*" ("The Reforestation, Forestation and Forest Protection Law does not offer enough nor will it have a positive impact on reforestation processes") (1996: 387), that it exists at all is significant. Increasingly, such concerns increased, coincidentally with increases in involvement by foreign agencies, mostly non-governmental organizations (NGOs) (see Sandoval 2000: 287,331-315, 409-414 and AFE-COHDEFOR 1996: 39, 155, 185, 199). Social and educational programs were put in place throughout the country, largely with the help of, if not directed by,

foreign interests from the U.S. or Europe (Sandoval 2000: 298-302, AFE-COHDEFOR 1996: 185).

Other such activities, not officially programatized, have also taken place and had potentially significant impacts. One of these is Peace Corps volunteers teaching in schools all over the country. Volunteers told me that they often do not have enough to do as their projects depend on government and organizational bureaucracy. Often, many of them take on extra responsibilities or projects, one of which is commonly to teach in local schools. Though I have no quantitative data, most that I talked with seemed to always teach ecology or conservation or, occasionally, a health/hygeine class. As this is happening during the same period that the government and NGOs alike have mounted environmental education campaigns throughout the country, the impact has been potentially tremendous.

The official and public views of Honduran forests is perhaps best summed up in this statement by AFE-COHDEFOR:

> *Los bosques de Honduras constituyen una fuente importante de generación de recursos económicos para financiar los programas del gobierno, lo mismo que para muchos propietarios de áreas forestales privadas. Sin embargo; para otros sectores de la poblacion, el bosque mas bien ha constituido un obstáculo para la expansión de sus actividades agropecuarias y ganaderias, ignorando el alto valor y significado que estos tienen por su aporte a la sociedad a través de la*

> *proteccion de los suelos, a la fauna, regulación de las fuentes de agua, moderación del clima, purificación del aire y la recreación*
>
> (The forests of Honduras constitute an important source for the generation of economic resources to finance government programs. The same is true for many property owners of private forest areas. However, for other sectors of the population, the forest is seen as an obstacle to the expansion of their agricultural and ranching activities, thus ignoring the high value and significance they have for society through the protection of soils, fauna, the regulation of water sources, the moderation of climate, the purification of the air and recreation.) (1996: 141).

The official state of forest cover in the country and its change between 1962 and 1990 is presented in Table 1. As the table shows, forest cover has declined but this decline is practically all in broadleaf forest and some mangrove. Pine forest cover has remained essentially the same. The decline in broadleaf forest cover is said to be primarily from campesinos and colonists who clear the forest for agriculture. As per Johannessen (1959), Devevan (1961), and my own observations, the broadleaf forest that is removed, if it does so, probably returns to forest in the form of pine trees.

BALANCE DE LA COBERTURA FORESTAL DE HONDURAS, 1962-1990 (SUPERFICIE Km² Y (%))									
ZONA		CONIFERAS		LATIFOLIADAS		MANGLAR		BALANCE TOTAL	
OCCIDENTAL	1962	3722	(13.6)	938	(2.3)	-	-	4660	(6.5)
	1990	3901	(14.0)	1681	(5.9)	-	-	5582	(9.8)
	SALDO	+179	(+4.8)	+743	(+79.2)	-	-	+922	(+19.8)
SUR	1962	451	(1.6)	232	(0.6)	918	(30.8)	1601	(2.3)
	1990	1465	(5.3)	481	(1.7)	424	(81.8)	2370	(4.2)
	SALDO	+1014	(+224.8)	+249	(+107.3)	-494	(-53.8)	+769	(+48.0)
CENTRAL	1962	16198	(59.1)	8186	(20.1)	-	-	24384	(34.3)
	1990	16067	(57.7)	4469	(15.7)	-	-	20536	(36.2)
	SALDO	-131	(-0.8)	-3717	(-45.4)	-	-	-3848	(-15.8)
ATLANTICA	1962	977	(3.6)	9452	(23.2)	474	(15.9)	10903	(15.3)
	1990	1465	(5.3)	2587	(9.1)	50	(9.7)	4102	(7.2)
	SALDO	+488	(+49.9)	-6875	(-72.6)	-424	(-89.5)	-6801	(-62.4)
ORIENTAL	1962	6040	(22.1)	21914	(53.8)	1586	(53.3)	29540	(41.6)
	1990	4917	(17.7)	19254	(67.6)	44	(8.5)	24215	(42.6)
	SALDO	-1123	(-18.6)	-2660	(-12.1)	-1542	(-97.2)	-5325	(-18.0)
TOTAL PAIS	1962	27388	(100)	40722	(100)	2978	(100)	71088	(100)
	1990	27815	(100)	28472	(100)	518	(100)	56805	(100)
	SALDO	+427	(+1.5)	-12250	(-30.1)	-2460	(-82.6)	-14283	(-20.1)

Table 1: Forest Cover in Honduras (Source: AFE-COHDEFOR 1996).

They grow fast, they are preferred by the forest sector, and, perhaps most importantly from a historical perspective, they thrive in settings of frequent fires. As land that is put under traditional use is frequently burned, pine forests thrive while broadleaf forests struggle.

Honduras is a forested country. Assertions are that the country is 62%-65% forested (Sandoval 2000: 17, Pineda 1997: 279). Assertions also suggest that the country is of a disposition such that over 87% should or could be forested (Sandoval 2000: 17). Forest cover concerns, then, seem to be with the loss of broadleaf forest. However, the pine forest cover that does exist may also be cause for some concern, as much of it exists essentially in crop form, standing in cleared, often rowed stands with little or no underbrush and relatively low tree densities. The problem is that the substitution of such monocultures does not replace the ecological dynamicity that a full forest

supports (Hall 1985: 194). In Costa Rica such "reforested" stands are often in teak (*Tectona grandis*), an exotic from Asia which is probably not an adequate ecological replacement for or equivalent to the tropical forests they have replaced (see Evans 2000: 51).

One interesting note on forest cover, noted by AFE-COHDEFOR is the assertion of the diminishment of forest in and around populated areas (1996: 408). This is thought to be primarily from exploitation for building materials and firewood. Indeed, this does happen. However, as Chapter 6 will show, such generalizations may not be completely accurate.

In 1994, Eggen-McIntosh, Lannon, and Jacobs published their efforts to map forest distributions in Middle America. One of the incentives behind their efforts was to map remaining forest areas so that they could be outlined for protection. The FAO data (1993) they used asserted that through the 1980s, Middle America had the second highest rates of deforestation in the world (1.5%/year) behind Southeast Asia (1.6%). These rates were cited as being twice those for tropical South America and Africa. Brockett and Gottfried (2002) recently illustrated how such rates are tied to state policy. Shortly after, Sader et al (2001) noted that these rates had declined somewhat in the 1990s. Further, working with efforts to establish the proposed MesoAmerican Biological Corridor (see Carr 1992), they looked at spatial differences in these rates, noting that deforestation rates were higher for places outside that area proposed for inclusion in the protected area.

Other, more closely looking studies have offered insight into the more specific and complex patterns of ecological change in the area. For example, Pfeffer et al (2001) studied how protected status and restrictions on use affect land use and land cover change in Honduras' Cerro Azul National Park. Their results are multifarious, but one finding suggests that intensification through a shift from *milpa* agriculture to coffee production in areas of low population density actually frees up land for reforestation that would otherwise sit as fallow in the *milpa* rotation cycle. Rose and Ugalde (1997) outlined a variety of agroforestry systems, looking at them from a forestry perspective in terms of production and potential, for example the role that coffee shade and fruit orchards play in supplying firewood.

More specifically, Tucker and Southworth (2001) have recently examined the La Campa municipio in the southern part of Honduras' Lempira department. What they found was a trend toward reforestation, particularly in less accessible areas and on private land. They attribute this largely to agricultural intensification and a logging ban passed by local residents. Though they somehow conclude with the notion that continuing socio-economic and demographic changes seem likely to lead to a deforestation trend in the future, the significance of this study is that it shows how macrolevel data (such as that supplied by the FAO) "can obscure areas such as La Campa, where reforestation trends contradict the expectation" (282). Indeed.

Another recent study with important implications for forest issues worldwide is the European Union funded Tree Resources Outside the Forest Project (TROF) (see Kleinn 1999 and European Commission 2002). The idea behind the project is to assess what tree resources exist outside so-called "forested areas". Though such tree cover actually stands to make up a huge extent of biomass, we know very little about such resources. Especially with concerns over decreasing forest cover and increasing fragmentation, such resources stand to be important. As so much of the Earth's surface is outside forested areas but still contains significant tree cover and biomass, this is significant. The project sampled a total of 10 plots in Guatemala, Honduras, and Costa Rica to determine what tree resources exist in them and in what context. Though the results are too cumbersome to include here, the study is significant. One interesting note is that it indicates that areas with smaller landholding units seem to also have greater biodiversity.

As well, the TROF project is relevant to this study because the photo sites that make up my data set are also all outside "forest" areas yet offer a net increase in biomass and tree cover. This will be important to consider in the future, particularly with concerns over localized heat islands and with carbon sequestration. Scale matters. And the more closely one looks, the more complex things are.

Chapter 4
Honduras: a quick overview

Physical Situation

Honduras is located right in the middle of Central America (Figures 1 and 2), extending from 16° 2'N to 12° 58'N and from 83° 10'W to 89° 22'W (Pineda Portillo 1997). To its west, Guatemala extends farther west and north, abutting against Mexico and periodically claiming Belize. Southwest of Honduras, tiny El Salvador faces the Pacific Ocean, manufacturing tons of snack foods, among other things, to be shipped throughout the isthmus. To the southeast, Nicaragua is perhaps the country most similar to Honduras, stretching across the entire isthmus from the Pacific volcanic axis to the flat savannas of *La Mosquitia* and suffering a century of generally unfavorable economic and political control by the United States. Honduras has a short, hot Pacific coast on the Gulf of Fonseca, which it shares with El Salvador and Nicaragua. The much longer, flatter, and humid Caribbean shore, typically known simply as the North Coast or *La Costa Norte*, is home to the Honduras' Afro-Creole populations and to my country's banana plantations.

Honduras is a mountainous country (Figure 2 and 3). Approximately 80% of the country is made up of steep, rugged slopes (Echeverri-Gent 1995: 69). One geographer described the Honduran landscape as "a lot like a piece of crumpled paper" (Doolittle, personal communication). This and general low soil fertility, except for some river valleys and a few highland areas with volcanic soils, have made agricultural development difficult. This, combined with a colonial-then-imperial

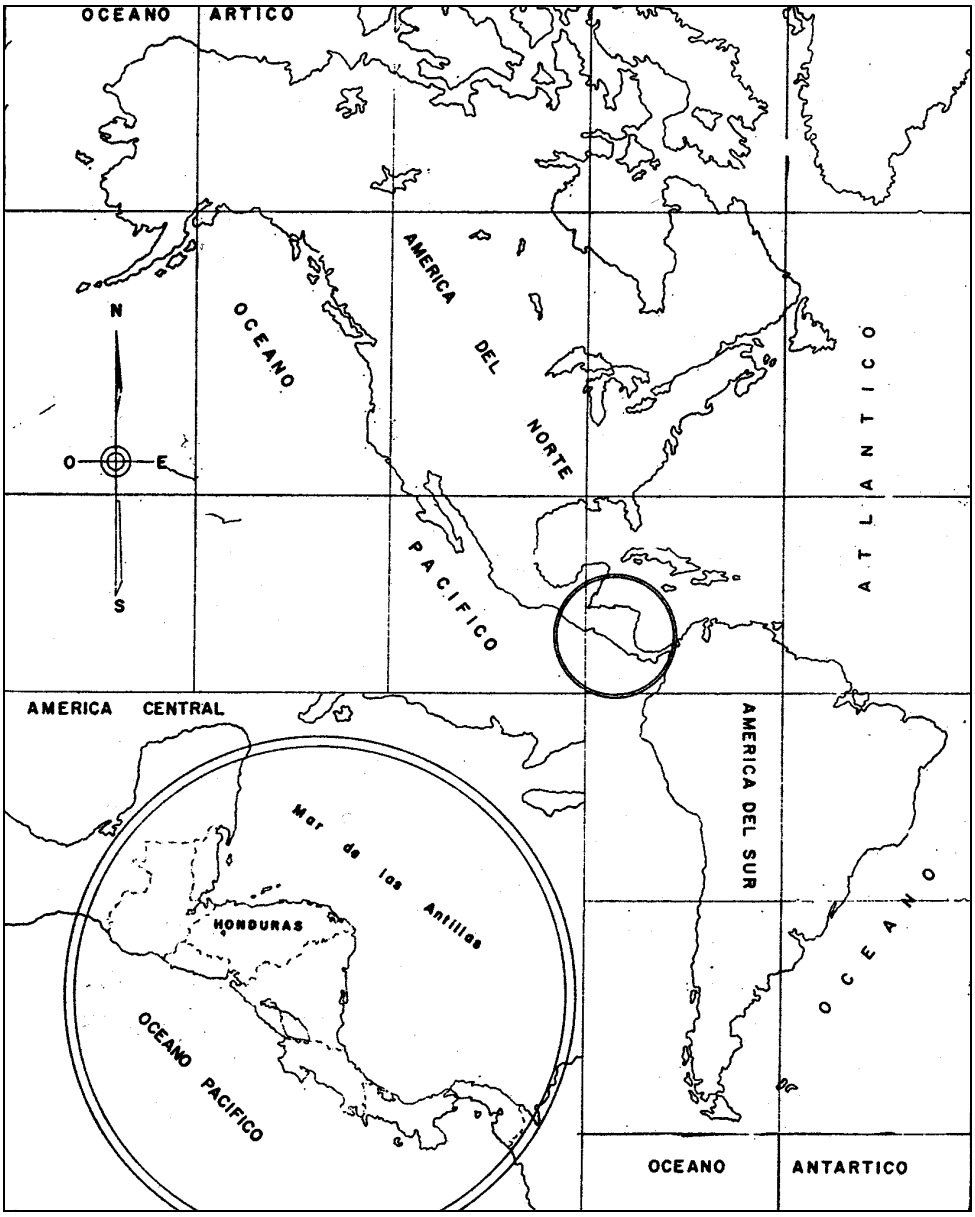


Figure 1. Honduras: location in the Americas (Navarro 1968: 4).

political economy, has made Honduras a poor country. In fact, as of 2001, it is the poorest country on the entire American mainland and second poorest in the hemisphere. Only insular Haiti is poorer (CIA 2001).

Figure 2. Map of Honduras (Adapted from C.I.A. 1985).

Geologically, Honduras is part of the ancient Old Antillia, characterized by old crystalline rock aligned in east-west trending mountain ranges often covered by limestone, sandstone, or volcanic effusion (West and Augelli 1966: 417). Many years ago, this structure formed the peninsular terminus of North America near what is now the Nicaragua-Costa Rica border. Geomorphic and tectonic forces eventually completed the isthmus connecting North and South America (Coates 1997). Though most of Honduras is mountainous, the Pacific volcanic axis just barely skirts the southern borders. Thus, the fertile volcanic soils that have helped feed much of

Central America for so long are rare in Honduras (ibid.). As well, the country lacks the majestic cone-shaped volcanoes typical of the region. Only a few sit as islands in the Gulf of Fonseca.

Honduras can be roughly and simply divided into three physiographic areas (Echeverri-Gent 1995: 69). First, the Caribbean lowlands of the North Coast are a broad, flat alluvial plain deposited by the many rivers that cross it and empty into the Caribbean. It is hot and humid most of the year, receiving 175 to 250 centimeters of rain annually with only a short dry season. In the extreme northeast, La Mosquitia is

Figure 3. Honduras: relief and physiographic areas (Navarro 1968: 7).

also part of the Caribbean alluvial plain though it differs in the extent of the broad, flat savanna lands that extend down along Nicaragua's Caribbean coast. Second is

the short and small Pacific coastal plain. Third, the rest of the country – 80% – is generally a collection of mountain ranges separated by narrow river valleys. In the west, these mountains rise to over 2800m at Celaque near Gracias, Lempira.

Most of the mountainous interior is home to an extensive oak-pine forest, generally from 400 to 2000 meters, though pockets of cloud forest remain at higher elevations (West and Augelli 1966: 417-418). Tropical rainforest, once more extensive, still covers parts of the Caribbean lowland, the greatest extent being the Rio Platano Biosphere Reserve (see Herlihy 1997). Savanna pastures appear in the drier, hotter south. Mid-latitude flora and fauna extend down the isthmus, many of them still reaching their southern extents approximately where the continent used to literally end. As well, some of this extension depends on temperature and "it is not surprising to find a steady increase in the northern flavor of the biota as one ascends a mountain from the coastal plain" (Carr 1953: 23).

Cultural-Historical Overview

The western half of Honduras was part of Mesoamerica, the area of so-called "high culture" that extended southward from its Mexican hearth (West and Augelli 1966: 419,231-253; Helms 1975: 53). The high culture of the Maya extended into Honduras – just barely, – leaving behind a ruined city at Copan on the Guatemalan border. Mexican high culture reached even farther south, extending to Costa Rica's Nicoya Peninsula and encompassing all but the Caribbean lowlands of Honduras and

Nicaragua, bringing cultural bases such as corn and tortillas and a more complex social organization.

The first European contact with the American mainland was in Honduras. Columbus first touched ground there in 1502 at what is now Trujillo on the Caribbean coast (Haggerty and Millet 1995: 5). Spaniards quickly began the colonization activities of claiming land, "reducing" Indians, searching for silver and gold, and making the first *Mestizos*. Spanish colonization of the Middle American mainland worked out of the strongholds at Panama and Mexico City (West and Augelli 1966: 254-261). Honduras, equidistant between the two, was influenced by men from both but a transition zone of colonial power eventually developed where the present Honduras-Nicaragua boundary is located. Honduras' colonial control and influence, then, came primarily from Mexico, later Guatemala. Spanish colonial control in Honduras also roughly followed the transition zone that separated MesoAmerica from the Caribbean lowlands of Lower Central America (see Newson 1986).

By the 1540s, Spaniards had founded towns in Honduras that still exist. Gracias, San Pedro Sula, Cedros, Choluteca, and Comayagua are some of them (Haggerty and Millet 1995: 5-10). Most of this was in the search for gold and silver. In Honduras, the Spaniards found plenty, especially of the latter. This, combined with hacienda-based livestock raising, formed the basis for Honduras' economy from the early 1500s until the end of the 19th century when the "banana men" arrived (see West 1958, Schoonover and Langley 1996). This is still very evident in the landscape.

The Caribbean coast, lacking in significant mining material, eventually became attractive to English loggers (Revels 2002), pirates (Galvin 1999), a few adventurous settlers (Bell 1989(1899), Young 1842), and Garifuna (Davidson 1974). The Bay Islands just off the coast were under British control off and on for years until finally handed over to Honduras (see Davidson 1974). This, combined with the more recent U.S. influence of the banana men and the Jamaican workers they brought over, has given the coast an Anglo/Afro-Creole character that differs drastically from the rest of the country.

As in Pre-Columbian times, the country's population distribution is divided along a northwest-southeast trend. The East/Northeast section of Honduras – namely La Mosquitia, Olancho, and, in part, Yoro – was sparsely populated and less developed when the Spaniards arrived and remains so today. This area, along with eastern Nicaragua, Costa Rica, and Panama, is sometimes referred to as Lower Central America in contrast to Mesoamerica (West and Augelli 1966, Helms and Loveland 1976). Large forest tracts remain in the area, along with populations of Miskito and, to a lesser degree, Tawahka-Sumu and Peche. Parts of the area are, though, undergoing current transformations at the hands of frontier agricultural colonists (Bass 2002).

Larger population concentrations exist throughout the western half, particularly around the capital city, Tegucigalpa, and in the manufacturing corridor centered on San Pedro Sula and Puerto Cortes. Indigenous ethnic groups still live here too but the ethnic markers that distinguish them from the larger *Mestizo*

population, such as language, are much diminished. For example, the Lenca dominate the western departments of Lempira, Intibuca, and La Paz, particularly in the rural areas (West 1998), but they have little beyond genetics and poverty to distinguish them from the larger population.

The area this study covers is primarily in the western and southern portions of the country (Figure 4). Some sites do extend eastward to near the Nicaraguan border and southward to the Pacific coast. One site at Omoa is directly on the Caribbean coast. There are no other Caribbean sites, though, and none from the north-central or expansive eastern areas. Thus, though presented in terms of looking at Honduras as a whole, the sites from which this study draws are regionally specific. This is unfortunate and, to be sure, a limitation. However, because of the methodology chosen and the "archive" that Robert West left behind, this is unavoidable.

Chapter 5
Methods of the Study

One of the greatest aspects of being a geographer is the availability of a multitude of both subject matter and methods of inquiry. The variety of accessible methods and data sources is particularly advantageous because no one source or method is adequate for the multitude of subjects that we study. Neither is one data source or method adequate for explaining the complexities of the human and biophysical relationships and processes that we study. Of the variety of data types that we use, five are pertinent to my study; repeat photography, ethnography, aerial photography, official data (climate and census, in this case), and published materials. Each type of these data requires its own types of analyses and provides its own types of insights.

Repeat photography is the basis of this study and the primary method of inquiry. By rephotographing the scene in an earlier photo, we can compare the two photographs to examine change. The greatest shortcoming here is extrapolation. A photograph is such a small piece of the world that changes that appear in this area may or may not be indicative of changes at a larger scale or more general nature. Relatedly, the photos, especially the original, are subject to the particular composition and perspective chosen by the author.

Aerial photography is used here to complement and substantiate the changes that I observed in some repeat landscape photos. Aerial photos allow a much broader

perspective from the air of a larger area, thus alleviating to some degree problems of composition. However, the problem of scale is inherent here too, though at a different degree. Comparing two aerial photographs shows us changes that happen at a broad scale but offer little in the way of specifics.

Official data, for example census and climate data, collected by governmental or non-governmental organizations provide information on a variety of aspects of their subject matter. This information is generally inaccessible otherwise, due in part to the broad scope of its source. However, this information, particularly when associated with governments, may also be subject to human error, bureaucratic hurdles to accuracy, and manipulation. In fact, historian Frank Tannenbaum chose to refer to Latin American census data as "poetry" (1966: 30).

Published materials are important in any research project, both for contextualizing the project and for documenting relevant information. Like official statistics, these materials are subjective at their points of origin but many have been checked to some degree and thus are useful at most levels. Their greatest shortcoming is that they are secondary.

At the base of any study concerning human-environment relationships is the incredibly subjective human. The problems of subjectivity concerning humans and our behavior is no small area of research in an array of disciplines. Why we do what we do simply cannot be quantified or observed in the way that other subjects can. Even understanding how quantifiable phenomena got how they are requires that we enter the subjective or the relative; the anthropological. Thus, ethnography is useful

at getting close to people and providing information about what they say, what they think, what they do, and what they say they think and do.

I use these sources of information to try and understand what has been happening in Honduras during the past half-century. I use each to supplement and complement the others and to contextualize what they reveal.

Repeat Photography

Geographers have long relied on photographs for research and presentation. Photographs, though surely crafted representations of the world out there, capture or extract moments. In those extractions, we get full or "thick" (Geertz 1973) descriptions of places, people, objects or events, as well as objectifications (Richardson 1994: 157). This objectification both distances us from the subject as well as conferring upon it an essentialism. This distancing has been a large part of the critique unleashed by the so-called "new cultural geography" upon the so-called "traditional cultural geography" (for example, see Barnes and Gregory 1997). Cosgrove (1984: 257-259) directly implicates the camera in attempts both within and without geography to objectify and thus control the world out there. Nonetheless, photographs are an integral part of cultural geographic research and are important for studying the human world.

We humans look. Vision is our most extensive sense. Photographs allow us to extract and, thus, to continue to look, or to show. Of course, advertisers have learned well the art of photography-as-argument, as contrivance and we do well to

keep this in mind when we take, show or see a photograph. Geographers have paid attention to this aspect of photography (Hoelscher 1998, Goin 2001). However, photos give us another story, a complement to the written words that we use. This other story, especially when combined with the words, offers us a perhaps better way to understand and remember. For studying landscapes, photographs are invaluable. Photographing scenes that were photographed at some time in the past – repeat photography – allows for the extraction of two moments. The time that separates them, though not "seen", is somehow manifested in and represented by the changes that have occurred and show up in the second photograph. The set of two photos, then, represents change and what causes it.

Several scholars have used the methodology of repeat photography to examine change over time. Examples include Veblen and Lorenz (1991), Vale and Vale (1983), Klett and Manchester (1984), Foote (1985), Hastings and Turner (1969), Humphrey (1987), Byers (2000), Works and Hadley (2000), and Lewis (2002). Most are, as Foote (1985) calls them, "then and now comparisons." Such studies illustrate and attempt to assess changes that have occurred during the interval covered by the two (or possibly more, as in Foote's case) sets of photographs. Attempts at explaining why such changes have occurred are also made, though such explanations are more difficult. The value of these studies is that they offer a visual record of real change, a record of what has actually occurred in the physical landscape of our world.

A photograph, though surely a sort of argument or statement about its subject based on the vantagepoint and the subject chosen, is comprehensive. It is not

comprehensive in that it captures and represents everything out there, but in that it captures everything in the field of vision in front of the camera. To be sure, the photographer chooses the field of vision. One may choose to point the camera just right so as to barely crop out a power line or a billboard, thus telling a very different story than if it was included. Alas, any description or story has this subjectivity inherent.

For a repeat photography project, if we simply accept the original collection of photographs for what they are and acknowledge the treatment of the original author, the original set of photographs offers a valuable record for comparative research. Thus, studying landscape change based on repeat photographs is to study change characteristic of the area. This is based on three points.

First is that repeat photography is a sort of landscape sample. We are bombarded daily with statistics about who we are and what is happening in the world. Most studies that attempt to address an issue too large to directly assess completely, examine a portion of their subject matter as a means of approximating reality. The idea is that this "sample" represents the larger whole. We use information about the sample to draw conclusions about the much larger whole (Moore 2000: 168). We generally accept these conclusions as accurate approximations of what is really going on.

Using repeat photography to examine the Honduran landscape stands to be, like a sample, perhaps an accurate measure of what is really going on. This is based on the fact that, beyond choosing from the collection of original photographs which

photographs to retake, what is photographed is not up to the second photographer. The second photographer is somewhat confined. This confinement is an advantage because it stands to potentially show what is actually happening. Thomas and Geraldine Vale (1983) addressed this issue.

When the Vales set out to retake George Stewart's photographs along U.S. highway 40, people in this country were speaking of drastic changes such as "unsightly commercial strips, the paved-over farmlands," etc. The Vales fully expected to encounter remarkable change across the U.S. along these lines. As they said after, "perhaps, then, the most surprising thing that the photo sites revealed to us was the lack of great change" (ibid.: 183). Though great changes had indeed occurred across the United States during the 30 years that separate the two photograph sets, what Vale and Vale found was that change out across the landscape was much slower and less intense than they expected. As well and related, instead of finding changes tending towards some sort of homogenization, as they also expected, they found the opposite, that "the American landscape remain[ed]…a study in diversity" (ibid.:185).

This illustrates, then, the value of repeat photography as a measure of actual change. If Vale and Vale had gone looking for the changes that they expected to find without confining themselves to Stewart's photos, they easily could have found, and photographed, them. And these changes had indeed taken place. The United States had changed in the intervening 30 years, but not completely and not nearly everywhere. A book full of photos of strip malls and parking lots could have easily been produced and this presented as the then-current state of things. But would it

have accurately depicted the state of things on a larger scale? The Vales caution that one should not "emphasize change by looking for it" (ibid.:184).

Second, a set of photographs that captures the character of a region might be compared to a narrative description that captures and connotes what geographers have come to call a "sense of place" (Eyles 1985). This sense of place is a combination of the objective characteristics of a place and those that are more subjective and experiential. It is one of those phenomena that we refer to as being greater than the sum of its parts. Entrikin (1991) refers to a "narrative-like synthesis" of places, that is similar to a sense of place. Simply more exists than a list of parts or characteristics. This goes back to Clark Wissler, Ruth Benedict and the Plains Indians. Benedict illustrated that culture, rather than being a list of traits as Wissler portrayed, is a meaningful whole into which different traits are integrated (Richardson 1989). The landscape is such a meaningful whole. So too, photographs present a whole story, made up of parts to be sure, but more meaningful together and having a past and a future inherent in them (Mohr and Berger 1982). Seeing changes through repeat photography allows us to not only see changes in various phenomena – vegetation composition, land use, material culture – but to see them within and as parts of an integrated whole.

Photographs of a place or a region capture that region's character (Vale and Vale 1983). Much like written narratives, photographs are incomplete pictures of the world. As Cronon (1983) pointed out, a true chronicle, one that catalogs and relates every single event that has occurred over a given period of time, is virtually

impossible to craft. Thus, our accounts of history are narratives, not chronicles, and these are inherently subjective and incomplete. Photographs are, as Berger and Mohr (1982) put it, *Another Way of Telling*. A photograph, they say, "quotes from appearances" (ibid.: 119). In so doing, this appearance "implicate[s] other events, ….simultaneous connections and cross-references" (ibid.: 121). A photograph, then, though rarely able to stand alone, tells a story. Two photographs, separated by time, tell a different kind of story, that of change.

Thus, using photography as its primary method of analysis, this study offers information in a contextual, integrated manner. The advantage of this is that it provides a more comprehensive picture of Honduras, its sense of place, and places the changes in vegetation in the photograph sets into a larger cultural context.. It is in the landscape that our lives are lived. It is here that we express what it is that we value. It is here that processes merge, thoughts become expressions, and spaces become places. In the photos, the landscape appears as it exists. And changes appear as they occur: interrelated. This brings up the third point.

Repeat photography offers a comprehensive view to examine. This applies equally to subjective, humanistic approaches and more objective, scientific approaches. In Hastings' and Turner's (1969) study of vegetation change using repeat photography, they argue that one advantage of their photo-based study is that it is more comprehensive than other studies of vegetation change in the U.S. Southwest. This was primarily because heir study looked at the totality of what was in the photographs. In this case, then, they looked at and examined basically every plant

species that appeared. This, they claim, stands in contrast to other studies that looked at only one or a few select species. These select species were thus treated apart from other, perhaps related species. Hence, changes in the select species were often interpreted out of the context of the landscape and species complexes within which they exist. Conclusions of these various studies, then, have often been contradictory.

Hastings' and Turner's study of the Southwest, based on repeat photography, claims to be more accurate largely because of the comprehensive nature of the photographs. Also, the methodology allows us to see things we might not think to look for, such as interrelationships. These obviously cannot be predicted or even planned for as they are inherently surprises. But these changes might also go otherwise unnoticed with other research methods.

Repeat photography has typically been employed in the study of vegetation change. Some of the better known book length works are the aforementioned Hastings and Turner study, *The Changing Mile* (1969), R.R. Humphrey's study of vegetation change along the U.S.-Mexico border (1987), the Veblen and Lorenz (1991) study of ecological change on the Front Range of Colorado, and Conrad Bahre's 1992 response to Hastings and Turner, *A Legacy of Change*. Others are Works and Hadley (2000), which also used the West photo collection for a study in Michoacan, Mexico, Byers' (2000) study in highland Peru, and Ames (1977), also a study of the borderlands. Other uses for repeat photography have been Foote's (1985) study of the velocities of change using more than the typical two sets of photos, the aforementioned Vale and Vale (1989) study of the changing American

landscape, and Klett and Manchester (1984). Foote's study is particularly important in that it showed that change in urban Austin, Texas has been occurring at a steady rate over a significant portion of years, and not speeding up. Nonetheless, the vegetation change studies are more relevant to this project.

Hastings and Turner compared 97 sets of photographs from the desert landscape of southern Arizona to assess change between the 1880s and the 1960s. Between the four factors of cattle grazing, rodents and jackrabbits, fire, and climate change, they concluded that climate change, more specifically an increase in aridity, has been responsible for the changes in vegetation that they observed in the photos. However, Bahre (1992) pointed out that this study relied too heavily on photographs that contained and were taken in cultural settings without sufficiently considering the activities of humans aside from grazing as agents of significant vegetation change. His 1992 *A Legacy of Change* relied also on repeat ground photography, as well as repeat aerial photography and analysis of landscape descriptions to analyze vegetation in the same region. He, like Gehlbach (1981) and Humphrey (1987), proposed that the conclusions of the Hastings and Turner study were perhaps incorrect, that evidence did not exist for some of the changes they noted, and that "[m]an's landscape tinkering" (Gehlbach 1981: 239) was probably more responsible for the changes that had occurred than climate change. Thus, repeat photography is neither a perfect nor complete science and conclusions drawn from it remain open to debate.

Foote (1986) stated that rather than attempt to utlilize it as such, time-lapse photography can be a valuable supplement to and extension of other modes of

inquiry. Indeed, he says that one of the primary reasons that geographers have not used photographs as widely as other iconographical sources such as maps is that they are simply hard to measure. As well, he said, they are not yet "assimilate[d] into existing paradigms of research" (ibid.: 466). However, he also asserted that some of the information available here can be important. Thus, hopefully repeat photography would be integrated into future research paradigms. Given the number of recent projects underway, this seems to be the case (http://bridgland.sunsite.ualberta.ca/html/, http://wwwpaztcn.wr.usgs.gov/wyoming /rpt_ground.html, http://climchange.cr.usgs.gov/rio_puerco/, http://wwwpaztcn.wr.usgs.gov/tumaplot/index.html, http://www.nrmsc.usgs.gov/research/repeat_photo. htm).

Throughout his long and distinguished career, geographer Robert C. West took thousands of photographs in the field. The majority of these photographs – taken between roughly 1940 and 1990 – are of places and landscapes in Middle America. In this study, I use the extensive West photograph archive as a baseline from which to evaluate how the Honduran landscape has changed and is changing.

I selected 120 photos that West took on a 1957 trip through Honduras for rephotography. West, as a Latin Americanist, surely captured neither every place nor every aspect of Honduras. However, as a geographer trained under Carl Sauer, a large part of his geographic endeavor in Middle America was to describe and explain the region's general character (see Gade 2001). Part of doing this was by photographing specific scenes and landscapes. Between June and December of 2001, I traveled throughout Honduras seeking out and rephotographing the scenes in the

photos I had chosen. In the mid-1990s, West catalogued his extensive photograph collection, carefully describing each photo from field notes he had taken. The cut lines that accompany each photo in the collection were my primary guide for finding each site. Field informants further helped me.

I chose the 120 photos somewhat at random during a visit to the Louisiana State University Department of Geography and Anthropology. Going through the Honduras section of the West collection, I looked for photographs whose sites I thought would be relatively easy to find. Also, I looked for a variety of types of landscape views. Close shots of the Honduran built environment, panoramic views over towns and their settings, views that showed significant background and/or foreground vegetation, and a few shots with people would, I thought, give me a sort of sample of Honduras at different scales. Originally situated to study the impacts of modernization and globalization on the Honduran landscape, the study focus changed after I began to rephotograph the sites. Though views of different types of landscapes at different scales, almost all of the photographs I was able to retake contribute to the new focus on vegetation change.

As for the photos that I was not able to retake, there were 40. The reasons for these vary, most having to do with my choice of photos. For many photos, my choices were simply naïve. For example, I chose a photo of two ladies threshing grain in a dirt street in the southern town of Texiguat, thinking that residents of the town would recognize the part of the street, though the photo only shows about 30 meters of dirt street, one wattle-and-daub house, and two difficult to identify women.

No one could. Another, a single house near the highway in the Talanga Valley north of Tegucigalpa, was practically impossible to locate. The house looks like essentially every house in the valley used to look and like few appear today. The landscape around the house looks like the entire valley. The girl in the photo is now 44 years older and unidentifiable to locals. And West's description does not give enough information to more precisely locate the site. Thus, several photos were one-by-one systematically pulled from consideration during my fieldwork.

Though West was a meticulous taker of field notes, recording each photo he took as he took it, some of the photographs in his collection are mislabeled. Though not frequently, occasionally I traveled to a town named in a photo description to find that I was in the wrong place. For example, three photographs (PP9-11) were labeled as being in the town of Belen, Lempira in western Honduras. One day, I hitched a ride to the road that leads to Belen. With a furniture builder from nearby San Juan, I walked into the town. One of the photos I was there to retake was a photo of a church looking across a flat grass plaza with a giant ceiba tree (*Ceiba pentandra*). In Belen, the church sits atop a steep hill, overlooking the plaza a few feet in front of it. Indeed the plaza does contain a ceiba. But looking straight across the plaza toward the church, I was looking at the bank of the hill the church sits on. I was in the wrong place. I checked the photo description. I was where I was supposed to be. But it was wrong. I spent the next hour walking through the small town looking for the right site. I showed the photo, and the two others that were supposed to be of Belen, to locals. Unanimously they told me that none of the photos were of their town.

Eventually I decided that I agreed. The photos were mislabeled. I eventually realized the sites of these three photos in Erandique in the same department but other photos were mislabeled whose sites I never located.

Outside of towns, photo sites were much more difficult to locate that I anticipated when I was choosing them. A house "on the road between" two villages or "near" a place, I learned, could be/have been "anywhere". Since 1957, new roads have been built, sometimes following the older, steeper original ones, often not. Also, so many rural houses looked (and look) alike in the mountains of Honduras, as an "open *ocote* forest on the trail" generally looks the same along the whole trail, and as a stretch of *quebrada* looks a lot like other stretches (if indeed the name West learned for such a feature matches the name that I learned), I simply could not locate many of the photograph sites that lacked distinctive, identifiable cultural or physical features.

For those who have spent time in Latin America, the experience of asking for directions is a familiar one. And a funny and frustrating one. Latin Americans will always give you directions to a place if you ask. Whether or not they actually know the location of the place is a different issue altogether. Pushed into a position of potential vulnerability, they authoritatively send you off to a specific place, often so very far from the place you are looking for. Asking for help in identifying photo sites turned out to be the same as asking directions. Though many Hondurans were overly helpful to me during my research, helping me to locate places, at times dropping a hoe, picking up a machete and walking me to the place I was hunting, getting local

help in identifying photos was far more difficult than I had figured it would be. Rather than looking for an abstract, named place, I would be showing them actual photos of distinct individual places, in literal and figurative black and white.

I quickly learned, though, that the same rules apply. "Oh yes, this place. Go down this road for….." Even if they were able to see the photos (as rural Hondurans have little though increasing access to modern health facilities, many have little access to eye glasses. They may or may not know that they can't see well and you will never find out), locals more often than not were unable to quickly discern what it was. But then the photos are abstractions of specific places in a specific moment that may or may not have had any bearing on the life of the person I was asking, so expecting everyone to immediately and easily recognize the photos would have been a bit demanding.

Nonetheless, with the help of many gracious Hondurans, I was able to retake nearly two-thirds of the photos that I chose from West's collection. (Surely, with the advantage of hindsight, I would choose the photos differently now.) The set of 1957 photographs coupled with my 2001 photographs represent 44 years, or basically a half-century, of change. The past half-century has seen the greatest proliferation of global technological innovation ever in human history. Accompanying this are globalization, increased resource consumption, and changes in land and lives all over the globe. Understanding the accompanying changes and processes is important. Comparing the sites in West's 1957 photos to their state in 2001 offers a small but significant look at how specific places in the American tropics have changed. More

specifically, it offers one look at the state of vegetation in an area of the world whose ecological situation is under intense Western scrutiny.

Other Data

As integral as they are, repeat photographs are not be the sole data source used here. I add to the repeat photography ethnography, air photo analysis, and the inclusion of other documentary data for support. Understanding the vegetation changes that have taken place requires contextualization. As well, assessing the causes of change, though never completely accessible, necessitates analyzing official data on potential agents, such as climate and census data, analyzing developments in land use change and the ideologies behind them, and, perhaps most importantly, requires talking to people.

What They Say They Do

Ethnography is writing about culture. Spradley wrote that it also is "learning from culture" (1980: 3). It has a rich history of broadening the universe of human discourse (Geertz 1973). By talking to people, ethnographers attempt to understand them (Briggs 1996). Ethnography, at least good ethnography, is more interpretive rather than experimental, meaning that it searches more for meaning than for cause (Geertz 1973:5, 26-28). I think that few scholars would disagree that talking to people is important. After all, who knows a place better than its people?

Ethnography is a complex endeavor. As for methods, ethnography involves "establishing rapport, selecting informants, transcribing texts, taking genealogies, mapping fields, keeping a diary, and so on" (Geertz 1973: 6). But is also more than that. Geertz wrote that "[w]hat defines it is the kind of intellectual effort it is: an elaborate venture in, to borrow a notion from Gilbert Ryle, 'thick description'" (ibid.). It is representative, observational, and interpretive.

Of course, being this complex, the practice of ethnography is not without problems. First, any ethnographic information is gathered by the ethnographer. Thus, it is both observed and interpreted (Spradley and McCurdy 1972: 15-18). This interpretation occurs on several levels and no ethnographer would likely interpret an event, situation, or conversation the same. All information passes through our own interpretive filters. Thus, the ethnographer cannot remain hidden. The ethnographer as human and scholar should appear fully. The ethnography should be seen as interpretation.

Similarly, a member of a culture or group as a representative of that group will not offer the same interpretation or image as other members. Culture is conversation, both between its members and in their heads. Few members would offer precisely the same definition or interpretation of a culture. As well, what people do and what people say they do are often not the same. So, the ethnographer is faced with choosing to whom to listen as well as how to interpret it (Briggs 1986).

Objectivity is no real option (Spradley and McCurdy 1972: 15, see also Natter et al 1995). Ethnographic data is rightly seen as information that has passed through

several interpretations. It is, at some level, a look into the heads of people. It can be accepted as insight into how people think and behave. But it is not complete and should not be seen as such. It should be accepted as rich interpretive insight, but insight that is similar to a photograph: a composition subsequently interpreted.

In my fieldwork, I talked to people all over Honduras. As an ethnographer, I talked to people about change, about years past, about the photos that Dr. West took, about what the world is like. The conversations I had with so many Hondurans enlightened and taught me. The information I received from them on change, the past and the present helped me to contextualize this study within the human world. What these conversations did best was to help me learn what Hondurans think about what is happening in Honduras and the world.

Learning what Hondurans think gives insight into what information they have. Culture is shared knowledge. It is also an ongoing discussion, or "talk" (Richardson 1981). What this means is that a culture is not monolithic, but that its members continually discuss and argue about what it is, continually redefining it. The knowledge they discuss, though, is generally shared. Thus, learning what Hondurans think gives clues to what knowledge, or information, they have, including information from "outside". This insight may give clues to what is happening and why.

Although what people say they do and what they actually do are so often incongruous, learning what they think is important. What people think is happening guides what decisions are made, guides what people do (Spradley 1980: 10-11). What people do guides what happens on the landscape. Thus, if Hondurans have

learned from official "outside" sources that Honduras and all of the Tropics is being deforested, they say that they are losing their forests. This information becomes part of their cultural discussion. They also then may act accordingly. Though an area may actually have more trees than forty years ago, its people, based on their cultural discussions, may think and say that they are losing their trees. Thus, they may support efforts to plant trees, to not cut down trees, and to talk about how much hotter it is now that their forests are gone. So, learning what Hondurans think through talking with and listening to them gives insight into what information is part of their cultural discussion, which helps them make their daily decisions about what to do in the lived-in world.

From the Sky

For studying vegetation change, Conrad Bahre (1991) wrote that "repeat aerial photography is superior to repeat ground photography" (90). This is because measuring and quantifying vegetation change, in particular life form distribution, is easier with the perpendicular angle of aerial photos than with the oblique and limited fields of view of ground photos. One disadvantage, though, with using repeat aerial photography is the problem of resolution, especially with the earlier photos. Other problems are the lack of detail, the lack of context that landscape photos contain, and availability. E.A. Gutkind (1956) gave a detailed look at the development and implications of flight and views of the Earth from above in *Man's Role in Changing the Face of the Earth*, a development that now extends into outer space and the arena

of inquiry known as remote sensing. The earliest aerial photos date back to the 1930s. For most of the world, the earliest photos are even more recent. Honduras received complete aerial photographic coverage in 1954. However, this has not occurred since. Various projects have photographed portions of the country during various years since 1954 (Instituto Geografico Nacional 1996). Even after Hurricane Mitch, recent coverage is limited. Thus using aerial repeat photography to study contemporary vegetation change can be difficult and limited.

I managed to obtain aerial photos from 1956 and relatively recent years (1990 and 1992) from three places in which I also conducted repeat ground photography. These three areas – Santa Elena, La Paz; Marcala, La Paz; and La Esperanza, Intibuca – are also sites of some my more in depth contextual research. Thus, these sets are analyzed to determine vegetation change since 1954. More importantly, the changes that they indicate are compared with changes in the repeat ground photos from the same areas to test the validity of the repeat photography method in reaching conclusions. As well, these findings will be contextualized with local ethnography where people have expressed specific views on the state of vegetation in Honduras. "*Antes, fue mas fresca. Mas antes, habia mas lluvia. Tambien, mas arboles. Ahorita no hay mucha lluvia y tambien es mas caliente. Es porque hemos cortado los arboles. No hay mucho bosque ahorita y, entonces, es mas caliente. Que lastima.*" ("Before, it was fresher. Before, there was more rain. Also, more trees. Now there is not much rain and it's hotter. It's because we have cut the trees. There is not much forest now and, therefore, it's hotter. What a shame.")

The aerial photographs, along with the ground photographs, offer a visual record to compare with this local sentiment to ascertain indeed whether or not there are fewer trees and how these correlate to changes in the climate data.

Quantities

Along with ethnography, I integrate other data into this study to further contextualize it and help to understand what has happened in Honduras over the 44 years between 1957 and 2001.

As so much of the discussion surrounding ecological change includes climate change (including my ethnographic data), I examined climate data for Honduras over the period covered. I only examined records for mean annual temperature and mean annual precipitation for several stations throughout the country. These offer a general picture of Honduras' climate over the past half-century. This general climate picture is consulted in the consideration of vegetation change in Honduras. It is also compared to the ethnographic data: what is happening versus what people say or think is happening.

The reason for consulting climate data is twofold. First, climate change is one of the primary concerns behind much of the ecologically-focused scholarship being conducted now. Both it causes and its impacts are increasingly part of our cultural discussion. Climate change and ecological change are surely linked. Changes in vegetation are often interpreted as the results of a changing climate. Climate changes, particularly at a local scale, are also often interpreted as the results of changes in

vegetation. While I am not entering the arena of global climate change discourse here, I looked briefly at climate data to see what local (read: country-wide) changes in mean annual temperature and mean annual rainfall have occurred and to compare this both to the vegetation changes that have occurred as well as to what people say and think about the link between the two. The data that I utilized, obtained from the *Servicio Meteorlogico Nacional* in Tegucigalpa, are relatively general. Precipitation and temperature data are from five stations throughout the country (Tegucigalpa, Catacamas, Choluteca, Santa Rosa de Copan, and Tela). Though the stations differ in years of collected data – for instance, data for Tegucigalpa go back to 1944 while those for Choluteca only go back to 1963 – the available information should be sufficient to determine a general picture of climate and climate trends in Honduras.

What people do on and with land makes up an entire subfield of geography and is part of the larger discussion on environmental change. For trying to understand change in Honduras, I planned to use information from the official 1961 and 2001 censuses. Changes in population throughout and within the country (who lives where) and in land use were to be assessed and included here. Any changes in these situations would be compared and related to vegetation change. Understanding the relationships between population and vegetation is important for both the obvious reasons that people have ecological impacts as well as that impacts may not occur as we expect. For instance, assumptions are generally that as population grows, deforestation increases. However, this is not always the case. Sometimes forests may indeed expand with population (Fairhead and Leach 1996). As well, what people are

doing on and with land may actually have surprising results (Robbins 2001). Unfortunately, the 2001 Honduras census remains incomplete at the time of this writing so a comparative analysis was not possible.

Published (con)Text

Documentary materials in the form of newspaper articles, and official information from a variety of institutions, in addition to the standard scholarly resources, further supplement the study. In particular, information from the Corporacion Hondurena de Desarollo Forestal (COHDEFOR) and other forest and vegetation related materials, including newspaper articles, are used to better understand what has happened in Honduras and why. A new study financed by the European Union, *Tree Resources Outside the Forest* (2002), is included to expand the discussion of vegetation resources in Honduras and the American tropics. Combining this with the collection of repeat photography, ethnography, and other data should then offer what Vale and Vale cal "a portrayal of changing forces and values of [an] economy and society" (1983: 186).

Chapter 6
Analysis of the Photographs

The photographs that make up the data set, as discussed in Chapter 5, were chosen somewhat at random. Thus, the sites are scattered throughout the country, but primarily in the southern half (see Figure 4). A variety of organizational schemes for the photo set are theoretically possible, depending in part on the analysis approach. Other studies using repeat photography have been organized in various ways, the most common being to place the photos in groups based on life zones (Hastings and Turner 1969, Bahre 1991). In these studies, this organizational scheme also conveniently followed a sort of geographical transect, another potential arrangement scheme.

Unfortunately such organization does not work well for this set of photographs for a variety of reasons. First, the photo sites do not follow any sort of transect, as, for example, the sets that investigate vegetation change along the U.S.-Mexico border (Hastings and Turner 1969, Humphrey 1987). West traveled all over Honduras, mostly on the backs of mules, going to places of interest to him, primarily colonial mining centers and the indigenous Lenca area in the western highlands. His paths were often circuitous and simply seem at times to have wandered from village to village, passing into and out of a variety of biophysical settings almost at random.

Second, organizing the photo sets into life zones simply does not offer any realistic basis for analysis. The Holdridge Life Zone System (1971) is an

organizational scheme that, at a very small scale, offers biophysical landscape potentials based on a set of factors, mostly climatic. At the landscape scale and in the

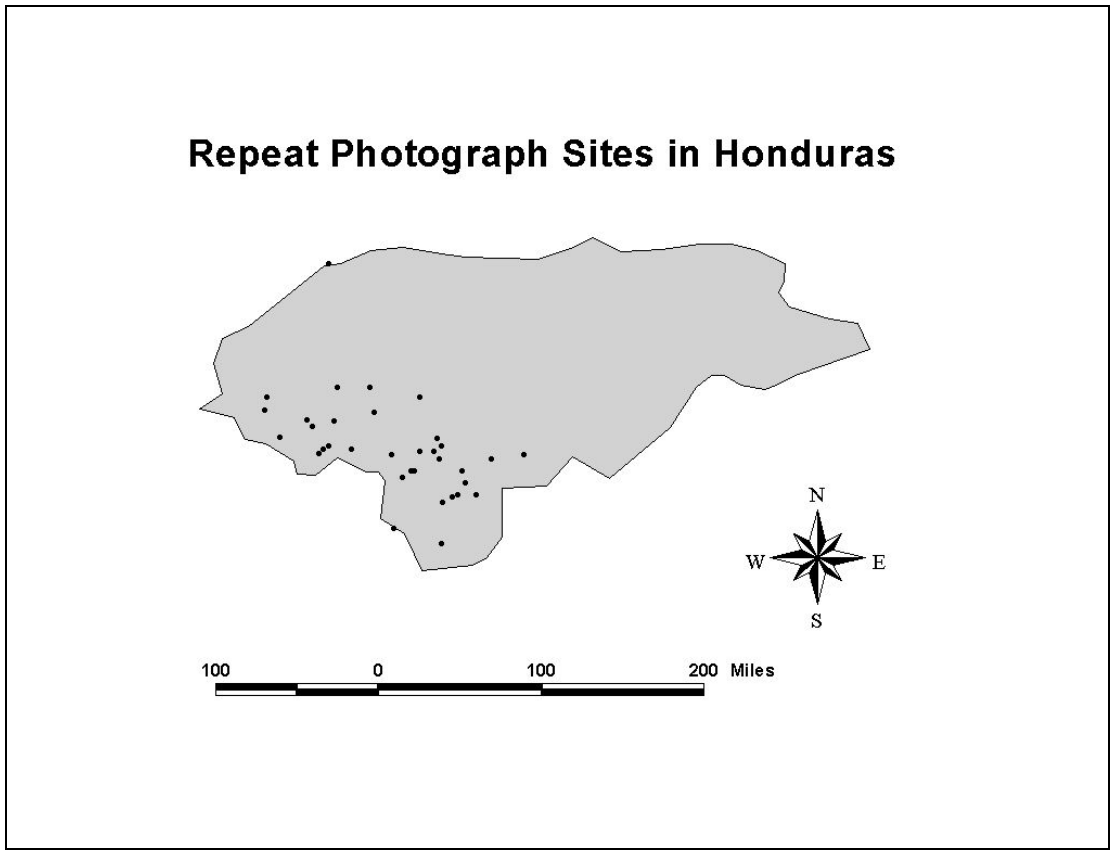


Figure 4. Repeat Photograph Sites in Honduras.

real world out there, the system is inadequate for any detailed analysis because it does not necessarily reflect reality, only theoretical potentials. Take, for example, the photos PP59-PP62 of Cerro de Hule, south of Tegucigalpa. In the Holdridge system, this area is categorized as Humid Sub-tropical Forest. As the entire hill has been under terraced cultivation for hundreds of years, no forest of any kind exists there.

Thus, to place it into this category before then assessing the changes that have occurred over the past half-century would offer little to the assessments.

In part because of these problems, and in part because I think that a spatial/regional arrangement is easier to keep up with, I have organized the photos from west to east across Honduras. Mind, though, that this again is not a clean transect but more of a meandering line, wandering from near Guatemala, to north of Tegucigalpa, down to the Gulf of Fonseca, and finally over to near the Nicaraguan border. In fact, the first three photos are not even from the site that is farthest west. They are, though, from a site that, on the north coast, is so far from the rest of the "transect" that I chose to put them first and essentially separately.

Geographers talk much of scale. Scale matters. Pedogenic regimes do not tell the story of local soil varieties, for example. The photos that I retook were taken at a variety of scales. Some are close-ups of street scenes or plazas. Others overlook towns or even valleys from hilltops. To include such differently scaled photos in the same group for assessments would be confusing. Further, the changes that such photos show are likely to be both of such a different quality as well as at different scales that they should not, if only for the sake of avoiding confusion to the reader, be included together. Therefore, the photos, as well as being organized from west to east, are separated into two groups based on the scale of the landscape scenes they depict. On the photo pages throughout this chapter, two photos appear. The top photograph is the 1957 photo taken by Robert West. The bottom photograph is my 2001 repeat photo of the same scene. Occasionally, three photographs appear, with

two 2001 photos. This is generally because the original perspective was unattainable. In such cases, accompanying explanations appear in the text.

Though the focus of this study is on vegetation change, in this analysis of the photos I acknowledge and discuss all of the types of changes that appear. I do this for several reasons. First, the changes are visible information. Any information presented here should at least be acknowledged and pointed out. Also, as the changes that appear, vegetation and otherwise, have occurred essentially together or during the same time period, they should be discussed together. They may or may not be related but they have occurred together. As well, discussing the other changes provides a sort of place-based context for the photos and the vegetation changes that appear in them.

In the analysis that follows, I describe and at times briefly analyze a variety of changes and types of changes in the photo set. Some photos receive lengthy treatment while others receive only brief attention due to the material they offer and to whether or not such material has been already discussed. Changes such as modernization, the development of transportation and communication infrastructures, increasing global economic linkages, and changes in the built environment accompany considerations of vegetation change. In addition, personal accounts and experiences further contextualize the photos and the places in them and my experiences there. These notions are all relevant to the data that informs this study and are consequently best woven together. Though less simple than other options, I do this because it gives a more holistic quality to the data set and the changes that I

am considering. A more systematic scheme would perhaps be orderly but would also fail to remind the reader that the photos and the changes are of places and, as such, are experiential and contextual, or textured (Adams, Hoelscher, and Till 2001). Following this albeit thick but hopefully also rich photo analysis, I offer a more systematic analysis/interpretation which does break things apart and considers each type of change trajectory separately.

Up Close

I stumbled up the street, my feel rolling off of and tripping over its cobblestones. I held my camera close to protect it from the light misty rain floating in the air. Up ahead at the corner, two brown kids walking by on the cross street saw me and stopped. They stood and stared. A long-legged, skinny dog veered far away from me as she passed, heading the other direction. When I reached the corner, I backed away from the house there and pulled out my photograph set. Opening to the one I was looking for, I held it up and examined it and the house together. Corner door, same windows (mostly), same roof height and shape, same rafters, same trees beyond: it was the one. I backed farther away to get the same field of vision as in the old photo. People suddenly began to appear. Some came out of the house. Some came from nearby houses. Others simply walked up from down the street.

I snapped a couple of photos, trying my best to replicate the same scene that Robert West photographed in 1957. Then I showed the old photo to the crowd as I tried to explain what I was up to. Everyone began to make observations, especially

the inhabitants of the featured house. They didn't know how old the house was, but they were sure that it was much improved now. "Look. The previous owners were poor. Now we are fixing it up, making it better. Look."

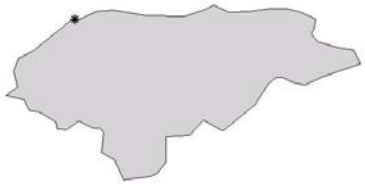
Indeed they were. There in Erandique, Lempira, one of the quietest and least-changed places I visited in Honduras, changes were still occurring. That photo probably typifies these changes. The arrival of electricity may be one of the most significant. The decrease in herbaceous vegetation in the cobblestone street probably reflects the increase in vehicular travel. The house façade itself shows some modernization. One aspect of this is the increased and popular use of color paint on the built landscape. In West's photo descriptions, he consistently described the towns he visited as being basically completely whitewashed. This is rarely, if ever, true anymore. Some are still mostly whitewashed but most towns now display painted stucco facades, often of bright pastels, throughout. This is true in Erandique. The implications are that local economies are larger and more developed, as people spend money updating their landscapes.

This first section includes photos, such as the one just described from Erandique (PP9). They are, if not strictly 'close-ups', of a closer scale than others in the set. As discussed, I have separated the set into two groups based on the scale of landscape analysis that they offer. This first group, the 'closer-ups', offers more detailed examinations of landscape specifics. Their fields of view are somewhat limited or less extensive than the second group. However, they contain much of

interest and do offer significant material for change assessments. Again, each set is organized roughly from west to east through the country.

PP1-PP3

All three of these photographs are of the fort, Fortaleza de San Fernando de Omoa. The fort was built between 1759 and 1777 by the Spaniards to protect Honduras' north coast from attack by pirates and/or other foreign powers. The fort, however, was easily captured by the British more than once. It eventually lost importance and was abandoned. Today, the fort is a national historic site under the tutelage of the *Instituto Hondureno de Antropologia e Historia* (IHAH), with a museum of the fort's history nearby and plenty of visitors, Honduran and foreign alike. Omoa, being directly on the Caribbean and a scant few miles from the booming *maquiladora* zone of Puerto Cortes/San Pedro Sula, now sees a significant number of tourists and is also, probably relatedly, growing in population.



The three photo sets can be treated together in assessing changes. The fort structure itself was obviously restored by the IHAH upon its becoming a historic attraction – material manifestations of a developed or developing tourism economy.

In these photos, the background areas are too far away and unclear to offer any assessments on vegetation changes there. However, the foregrounds are easily assessable. In short, more vegetation appears in the 2001 photos than the 1957

Figure 5. PP1; Omoa, Cortes.

Figure 6. PP2; Omoa, Cortes.

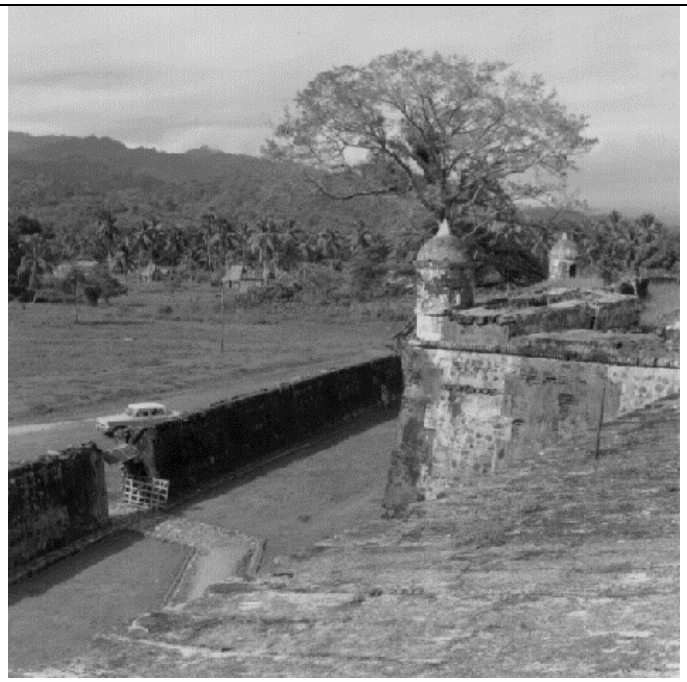


Figure 7. PP3; Omoa, Cortes.

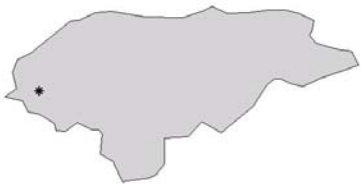
photos. The increase is primarily scattered trees, most presumably planted by people. In and around the park one can see new trees; for example, the *jicaro* (*Crescentia cujete*) in the foreground of PP1, as well as other broadleafed species in all three photos. Though the giant ceiba (*Ceiba pentandra*) in PP3 is conspicuously absent in 2001, the settled area beyond shows more and bigger trees in 2001 than in 1957, when the area, settled then too, supported mostly coconut palms and banana plants. In the background of photo PP3, settlement growth and material culture of modernization are also easily visible. Perhaps the most interesting aspect of the place that appears, though, is not completely obvious.

Omoa was built directly on the beach to protect the area from invasion by sea. A giant painting in the fort's museum depicts the early situation. The curved wall in photo PP1 is the front wall of the fort, which faces to the right (west) in the photo. The visible wall face in the photo is actually inside the fort. The wall curves around to its southern end at the small guard tower off in the distance. In photo PP2, the protruding section is the other (north) end of the wall. Directly beyond that protruding section and just beyond the curved wall in PP1 is a stand of trees, now much bigger than in 1957. The shore here is accreting. This "gallery forest" of a sort is growing in front of the front wall of the fort, where 200 years ago was the sea. Though the photos do not precisely indicate what the state of the forest or the coastline was in 1957, they do both seem to have grown significantly in the ensuing 44 years between the two sets. Once washing against the front wall of the fort, the

sea today is not even visible from the fort due to the small forest growing between them.

PP4

The photograph shows the market area in Gracias, Lempira in western Honduras. A very old town, Gracias was founded by the Spanish in 1526, just five years after Cortes' success to the north in Mexico. It was set up as an *Audencia* or governing council for all of Central America in 1544, but eventually lost importance to Antigua, Guatemala and Comayagua in Honduras. The town's three colonial churches and fort, Castillo San Cristobal, visible on the hill in the background of the 1957 photo, reflect its former colonial importance. Western Honduras is primarily a Lenca area (see West 1998) and former home of the national (perhaps mythical) hero, Lempira. Indeed, the department in which Gracias sits as well as the national currency are named for him.



The 1957 photo shows Lenca women from the nearby town of La Campa selling pottery that they made and then carried on their backs the 15km to Gracias. In the 2001 photo, women from La Campa still sell their pottery, though they came to town in pickup trucks and there are fewer of them. The men in the newer photo appear more *Ladino* in their dress than in 1957 and mountain bikes, a pickup truck, an

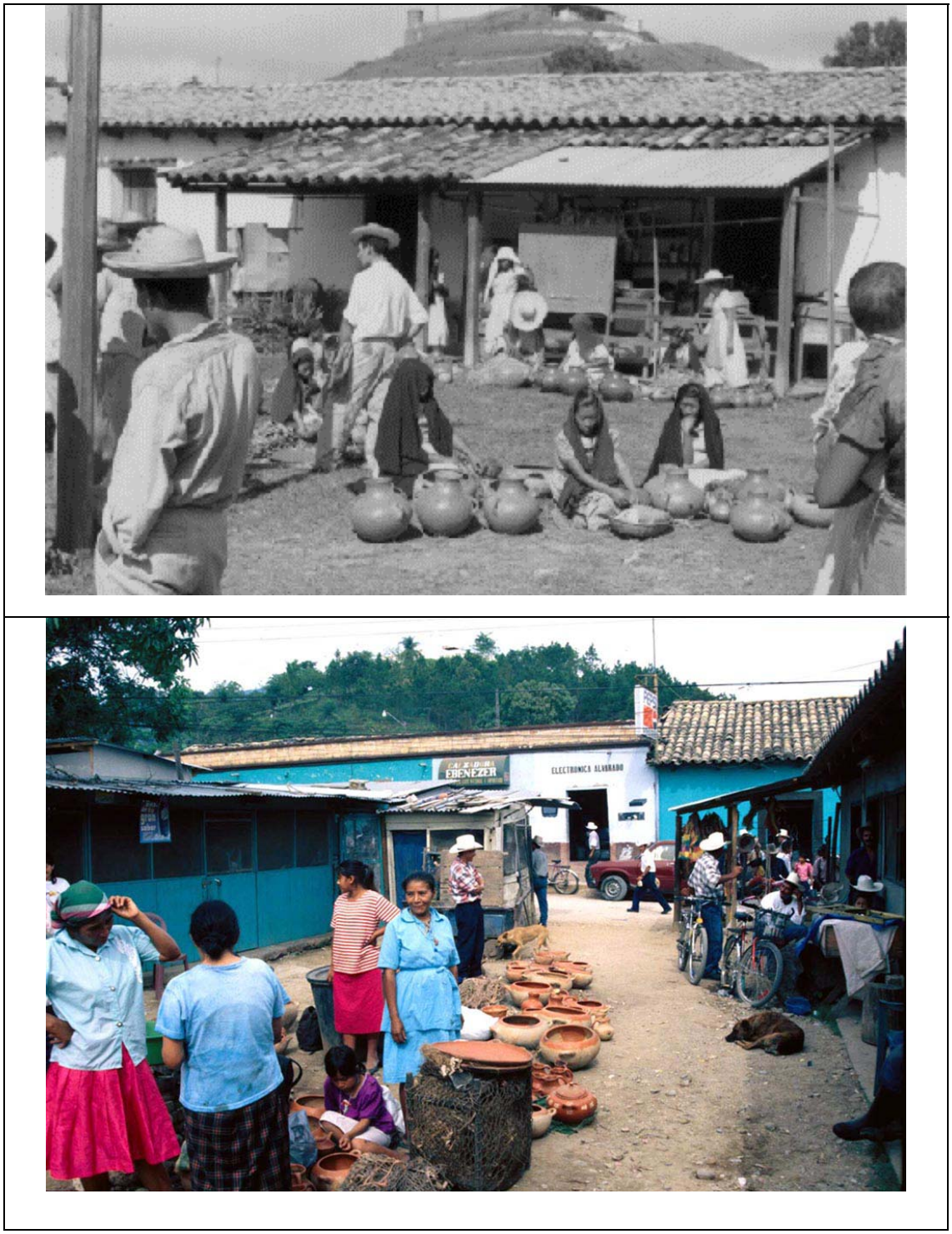


Figure 8. PP4; Gracias, Lempira.

electronics store, and an illuminated Pepsi sign indicate the modernization that is happening.

The change surrounding the *castillo* in the background is obvious. The *castillo* is now a historic attraction and a sort of public park where locals congregate, often to fly kites. The hillsides surrounding the *castillo* were bare of vegetation except for grass in 1957. In 2001, they appear covered in trees, most of them presumably planted. These plantings of trees in public spaces are relatively new and extremely common occurrences throughout the country. Though certainly not forest, they do represent in their totality a significant number of trees and, hence, significant biomass. They are also, as will be discussed later, manifestations of a contemporary public sentiment in the Honduran landscape. They are, I think, significant.

PP5 and PP6

These two photographs are also in Gracias. Taken essentially from the same spot looking in opposite directions, they show one of the main streets running through the town. Changes are mostly in the realm of modernization: more vehicles, more electricity, and more commercialization. Though the heavily forested mountain peak, Puca, is visible in the background, the photos have little to say about vegetation changes, aside from the epiphytic bromeliads (*Tillandsia spp*.) that grow on the new electric wires.

Figure 9. PP5; Gracias, Lempira.

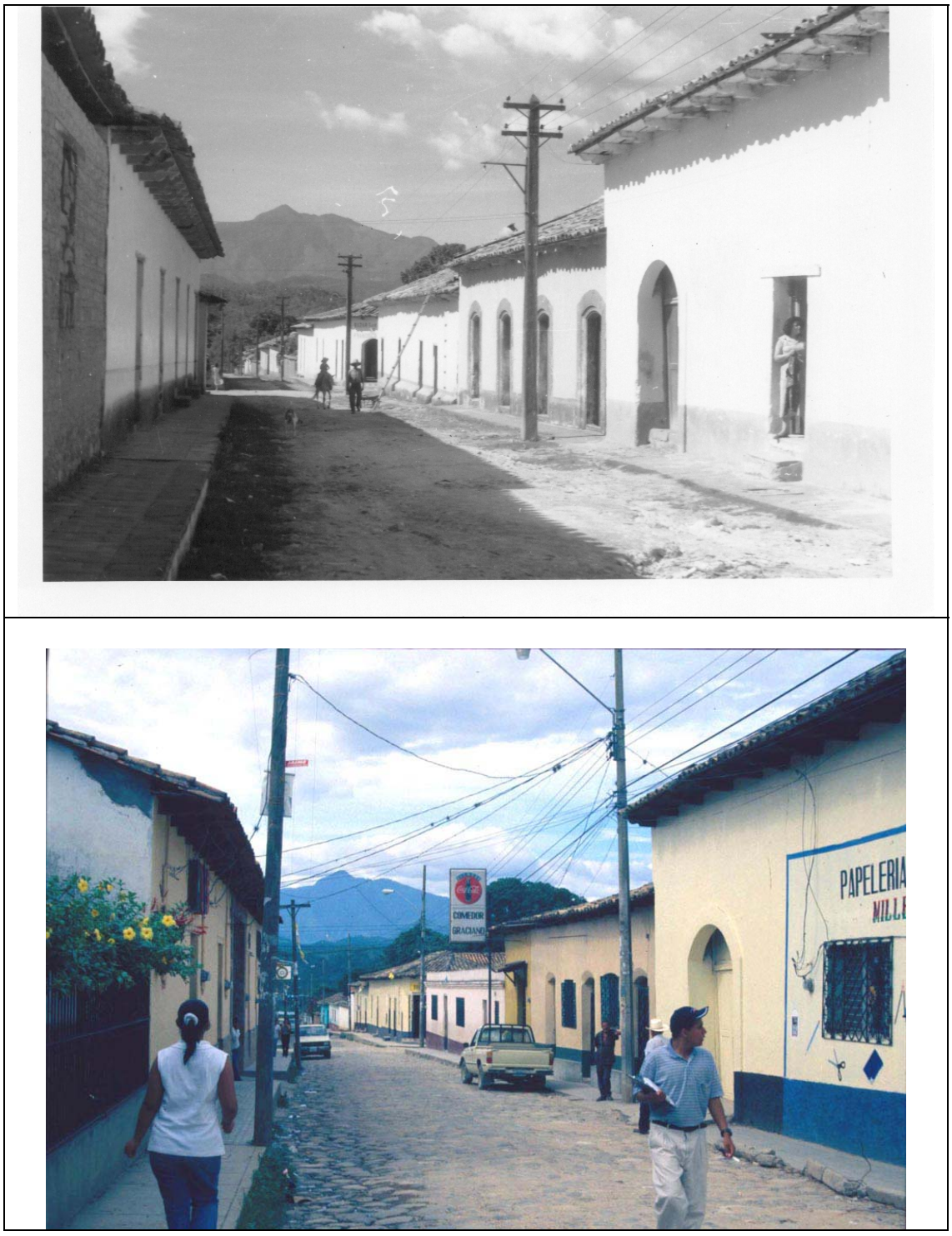


Figure 10. PP6; Gracias, Lempira.

PP7-PP11[2]

Erandique is in southeastern Lempira department. It is not on or close to any major roads. It is relatively isolated and very quiet. It seems to have changed little in recent years and the photographs reflect this. Changes are mostly in the built environment and then are practically all superficial: the church in PP7 and PP8 seems to have lost some of its shine while the houses in PP9 and PP10 have gained some. The church in PP11 gained some height, bringing to attention the notion that Latin American colonial landscapes may not be as timeless as they may appear or be thought to be. Three of the photos show the relatively recent arrival of electricity to Erandique. As for vegetation changes, the photos do show a net increase. However, this increase is tiny. Trees are visible beyond the church in PP7 that did not appear in 1957. The broadleafed ones beyond the belfrys are perhaps new but the others that barely appear farther east (left) are probably simply larger versions of the same ones that were there in 1957, also visible in PP8 which looks east down the south side of the church. In the other three photos, the vegetation is essentially unchanged, except for a few shrubs planted in front of the Barrio Erandique church.

[2]All five of these photos are mislabeled in the West Photo Collection. PP7 and PP8 are labeled as being in nearby San Juan, Intibuca while PP9-PP11 are labeled as being in Belen, Lempira farther west and close to Gracias.

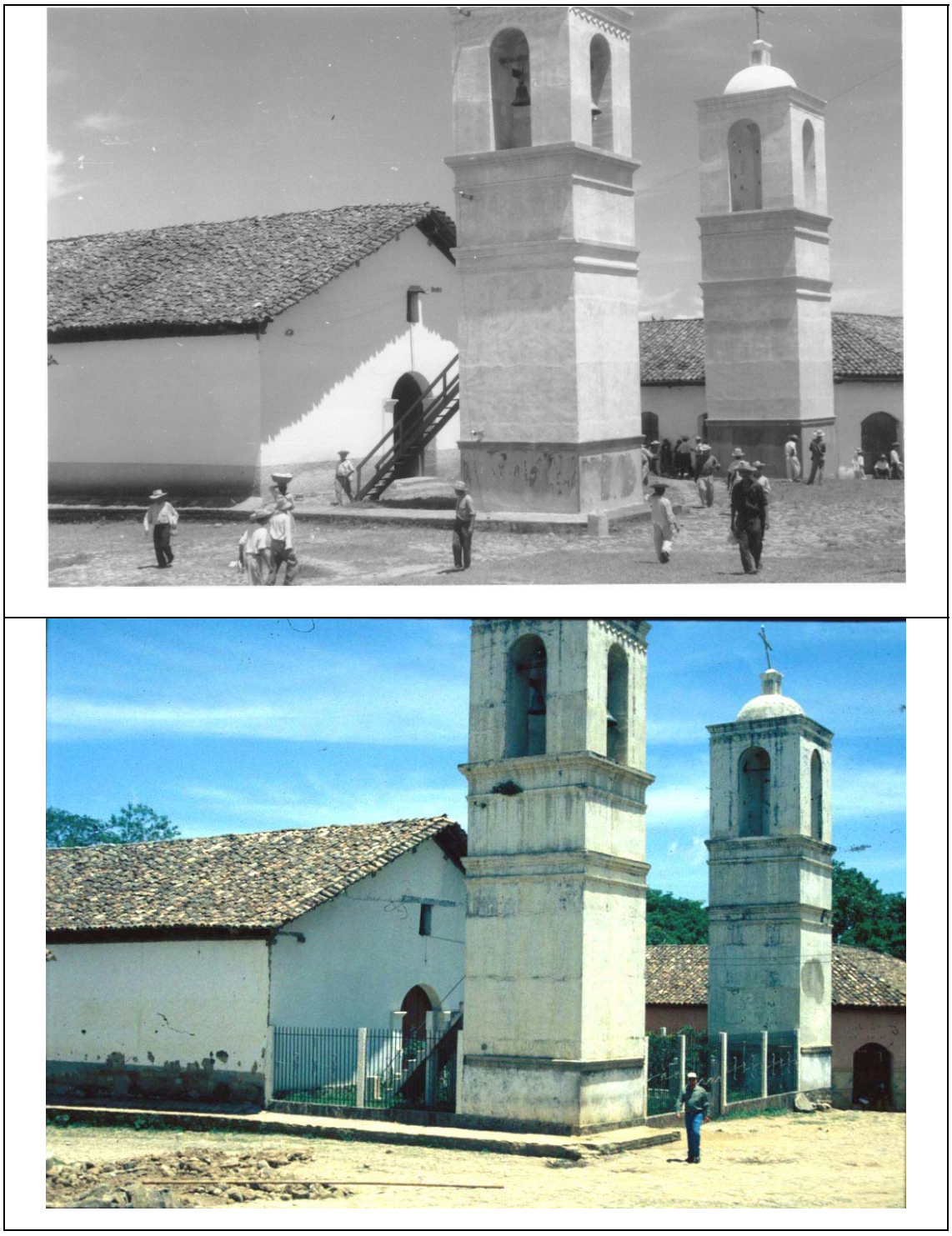


Figure 11. PP7; Erandique, Lempira.

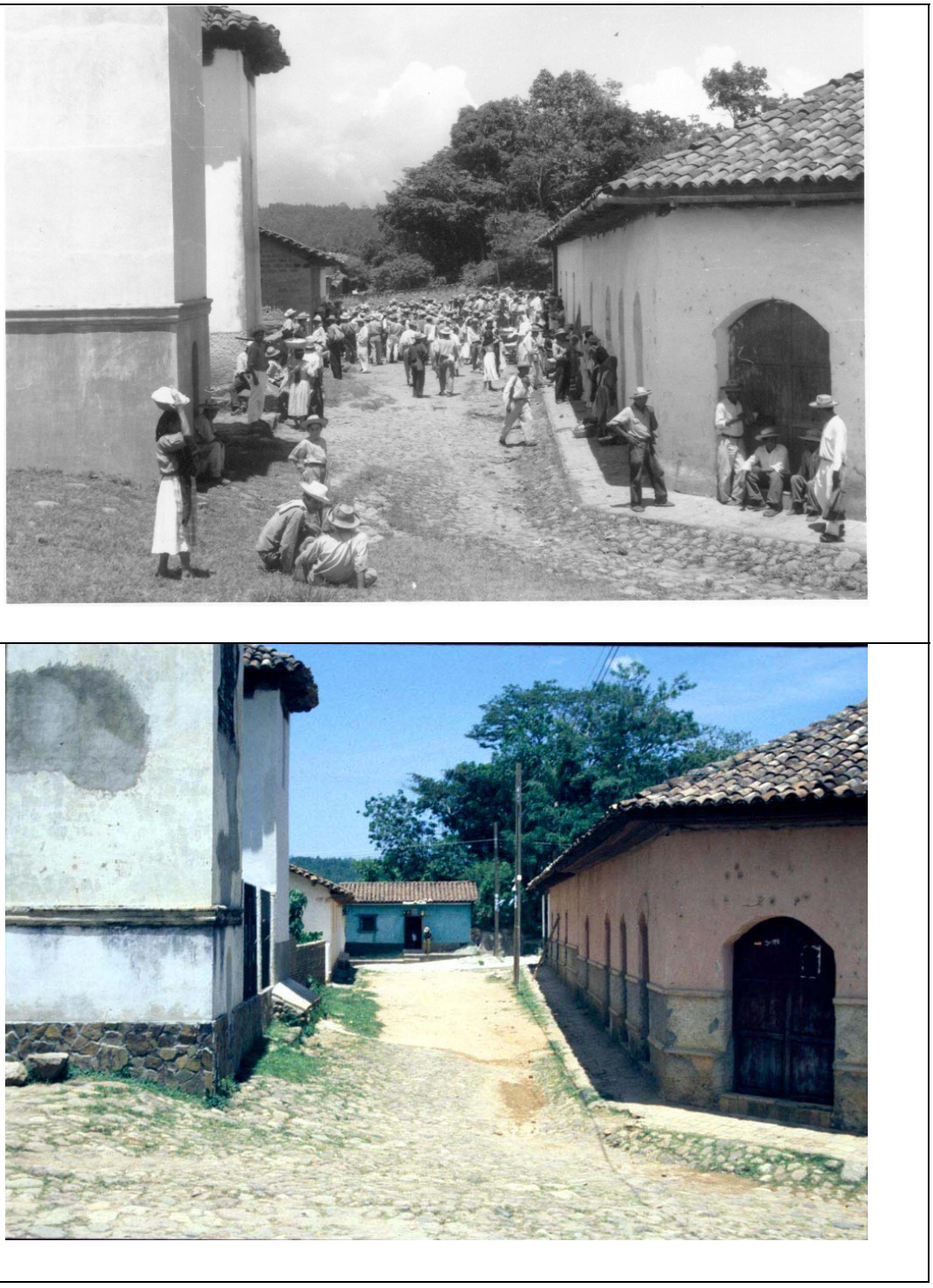


Figure 12. PP8; Erandique, Lempira.

Figure 13. PP9; Erandique, Lempira.

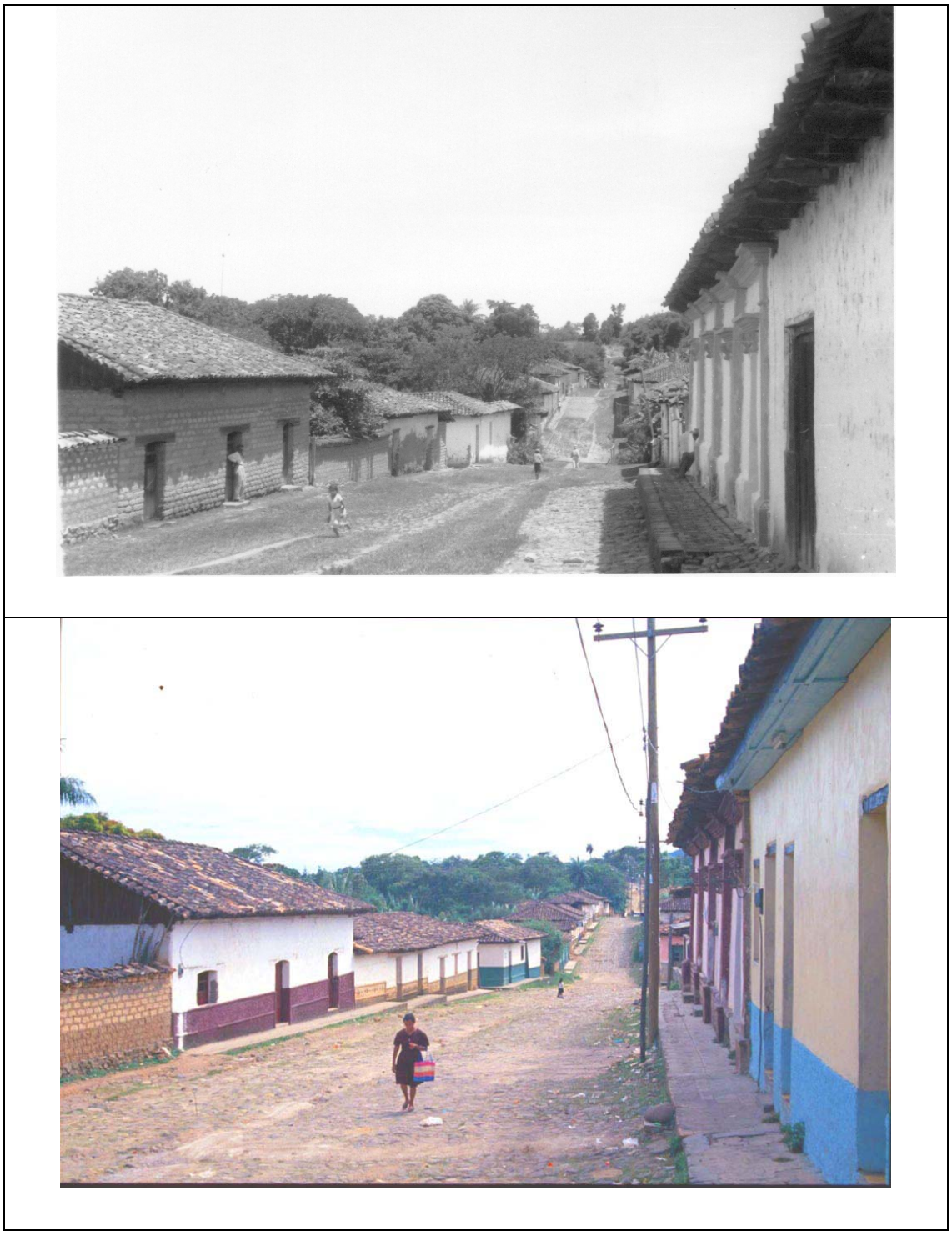


Figure 14. PP10; Erandique, Lempira.

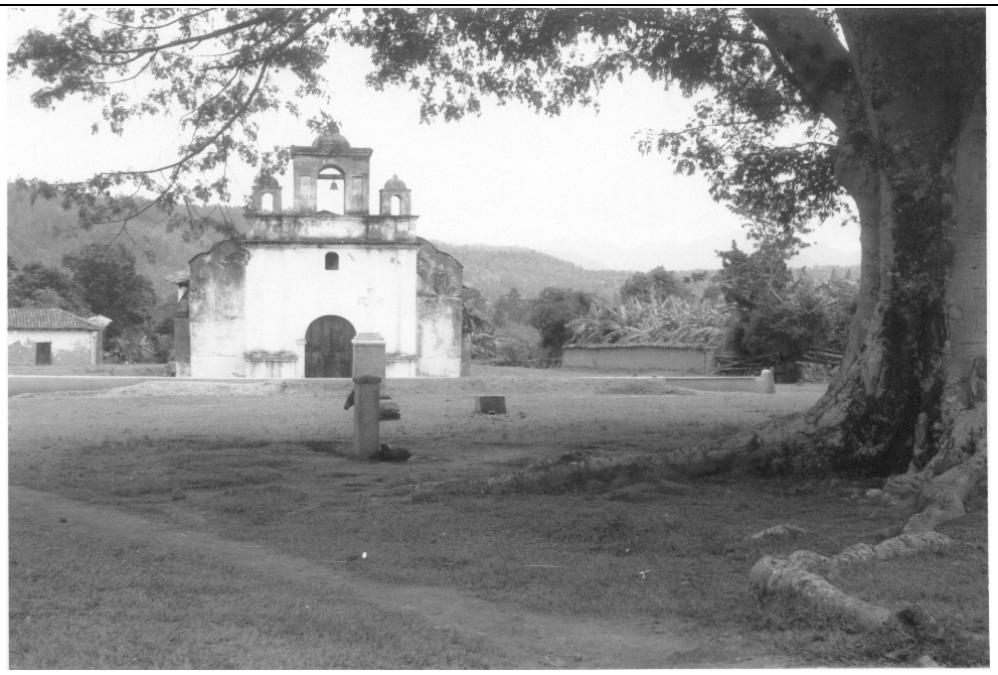


Figure 15. PP11; Erandique, Lempira.

PP12

Just east of the Department of Lempira is one of the most indigenous areas of Honduras, the Department of Intibuca. It is perhaps the hearth of the Lenca culture area, though the Lenca have lost much of their cultural distinction, in particular their language (West 1998). However, they seem to have recently experienced a renewed sense of ethnic identity, a phenomenon currently common throughout the world (see Frank 1998). Thus, images of "Lenca" people, landscape messages about indigenous identity, and even the word itself are now common throughout the area. The impacts of globalization, including the actions of Western NGOs, likely have something to do with this.

The twin towns of La Esperanza/Intibuca are the major center in Intibuca. The two towns were split in 1883 as a result of an ongoing indigenous/Ladino rift in the community (Benhur Nuñez et al 1992). When I was there in 2001, talk was about of efforts to reunite the two towns into one municipality, though chances of this happening are probably doubtful.

Photo PP12 is of public buildings on the plaza of La Esperanza (see also PP38). Aside from the development of the electric infrastructure and minimal landscape gardening, the only real visible change that has occurred is that the church belfry is taller, having been extended perhaps to appear more extraordinary and

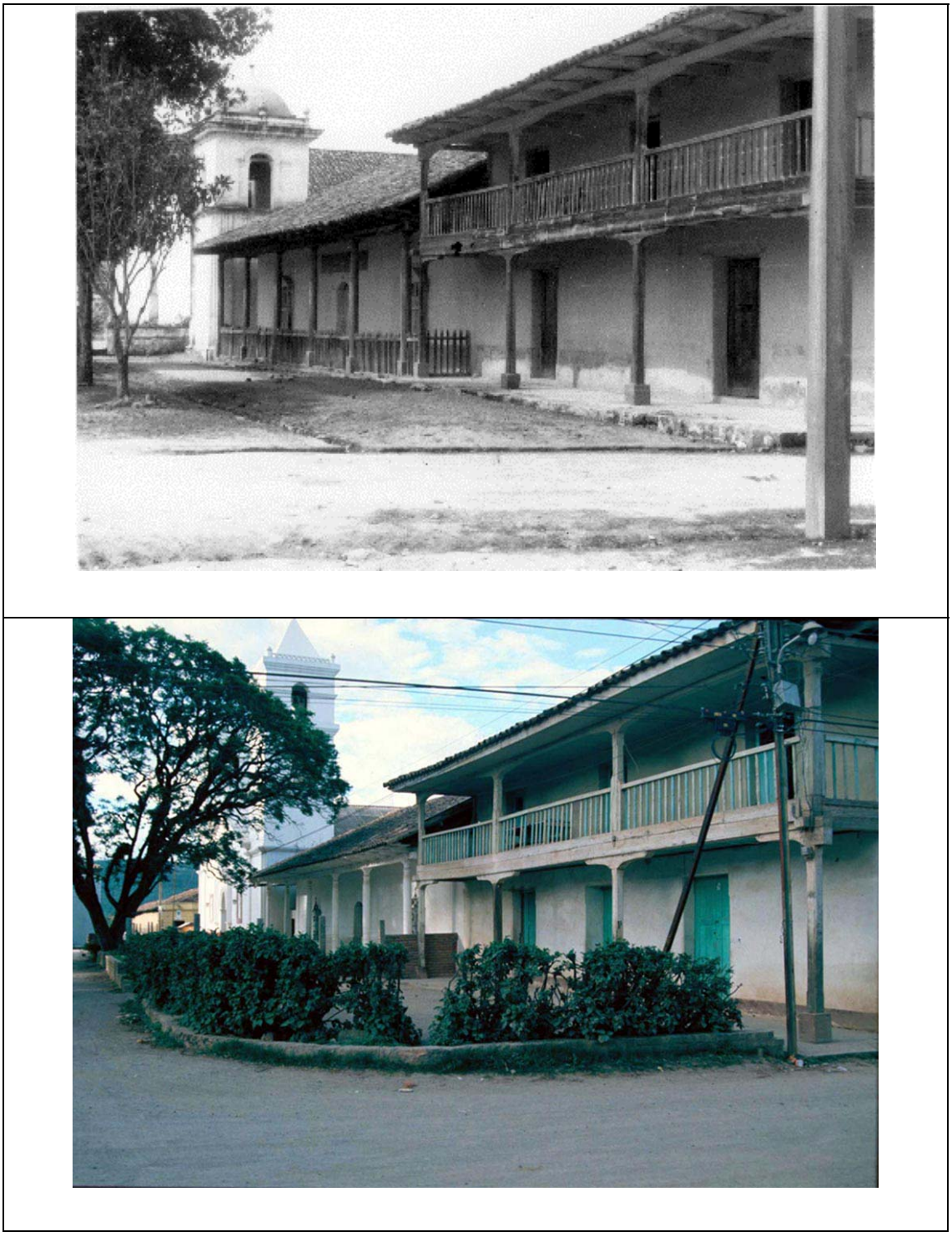


Figure 16. PP12; La Esperanza, Intibuca.

obvious among other buildings (see Rapoport 1982). As well, a door has been added to the front of the first building, illustrating the ease with which such changes are wrought, changes which I found to be remarkably more common than I would have guessed. The urban landscaping or public planting here, though not a significant increase in vegetation or biomass, may be significant in that they represent an increased attention to public and domestic vegetation.

PP13 and PP14

These two photos are of the market area of La Esperanza/Intibuca. The first, PP13, is probably not an accurate repeat photo of the same site because the market area has changed so that I could not positively locate the site. It is probably though, like the 1957 photo, an accurate representation of the market in general. PP14 is an accurate repeat photo. No vegetation changes are visible as no vegetation appears in any of the photos. However, the photos are interesting in the changes that they do show, namely cultural. Clothing and styles are now more like those of the televised world and the market is now more permanent and, hence, protected from the weather by structures. As well, and perhaps most significantly, the fertilizer bag-turned-handbag in PP13 illustrates the place the United States may hold in the minds and markets of Central Americans. The fertilizer was produced in Guatemala and sold in Honduras. The label is in Spanish. Nonetheless, the label "U.S.A." was also attached, apparently to simply convey the notion of quality. As far as I can tell, neither the fertilizer nor the bag have any direct connection to the United States

Figure 17. PP13; La Esperanza, Intibuca.

Figure 18. PP14; La Esperanza, Intibuca.

otherwise. However, the place of the U.S. in the minds of Hondurans shows up there in the landscape. This is common.

In a dirt street at the edge of the market, just out of the field of view in PP14, a young man sat on a wooden stool next to a small upright rack. Both were shaded by a multi-colored umbrella. The guy, about 18 years old, stared at the ground as his head bounced to whatever music was pulsing through the headphones he wore. About thirty watches hung from heavy wires across the front of the handmade wooden rack. As I slowed in front of him while glancing over the watches, he hopped up. The headphones came off and an inviting arm swung toward the watches.

"Looking for a watch?"

"No," I answered, "I've got one already."

"Well, it's time for a change," he grinned.

I bent down closer and looked over the watches. Most were plastic digital watches and pretty cheap. I asked how much one was and he answered. Another. Same answer. I asked if all of them were the same price. He said that they were except for two.

"Look. These are more. Look at this one. It costs more because it is much better, much better than the others. It's American."

"American?" I asked.

"Yes. American. It's better. It's American. Look."

He held the watch out and pointed toward the word "Adidas" engraved across the front. "See? Adidas. It's American. It's really good quality."

He held it out for a moment then returned the watch to its place on the rack. I picked it up and turned it over. Across the back was engraved "Made in China". He saw me looking.

"It says that it's from China but it's not. Lies. It's American. See? Adidas. It's better. Good watch."

I put the watch up and stood up. Seeing that he was making no sale, he looked around him and then placed the headphones back on top of the "No Fear" cap on his head. As I turned to step away, he pushed the play button on his portable CD player and sat back down. I walked away trying to figure out the significance of the encounter: a cheap Chinese watch with a German brand name pirated onto it is thought to be American. More, thought to be American, it is thus thought to be better. Clothes and products are arriving to Latin America, mostly via the Canal Zone, that are manufactured in Asia but that carry icons and images that characterize popular styles and products in the United States. So-called "fake" brands that mimic popular brands and styles from the United States – the Nike swoosh and the Levi's pocket emblem are popular ones – are sold, bought, and worn in towns and villages throughout Honduras. These products are increasingly dominating market areas. As well, apparently, they also maintain an association with the United States, or "America", that means virtue and quality.

PP15

To the north of La Esperanza is Lenca countryside: a beautiful, green, rolling mountain landscape, often forested and dotted with the houses, fields and villages of these gentle people. One village, Azacualpa (a common toponym in MesoAmerica meaning 'desolate land' or 'place of ruins'), is perhaps representative of the cultural geography of the area. The inhabitants are practically all Lenca. The settlement area has a more or less dispersed pattern, in this case on the hills surrounding a giant highland swale called locally a *chagüite* or *llano*. Ancestors of the local residents were probably growing corn there long before the Spaniards boarded ships and headed over. Locals still do.

The 1957 photo is a photo of the school at Azacualpa with "Lenca pupils, and ladina teacher" (West 1995)[3]. The first 2001 photo is, according to locals, of the same spot. The new cement block building, though, is a new evangelical church, a product of the legions of missionaries that American culture increasingly sends through that world in search of converts. The new school in the second 2001 photo is about a half-mile down the road, is made of 7 large new cement block buildings, and

[3] Citations of 'West 1995' denote his descriptions of the photographs from the photo archive. A citation refers to the description that he gave of the photograph under discussion. A table of the photographs included in this study and their corresponding catalogue numbers in the West collection appears as an appendix to this study.

Figure 19. PP15; Azacualpa, Intibuca.

has over 300 students. The students are still all Lenca and the teachers remain *Ladinas*.

The trees in the photo are a juniper (*Juniperus spp*.), planted along a fence next to the road. This is common throughout Honduras. Particularly, junipers grow quickly and easily and stay green all year. Thus, they, like eucalyptus (*Eucalyptus spp*.) are popular candidates for some of the conscious efforts to put trees in the landscape.

PP16 and PP17

In the Department of La Paz, to the east of Intibuca, are still more of the highland Lenca towns that characterize western Honduras. Santa Elena Jocoara, south of Marcala, is one of these (see also PP40 and PP41). It is also one of the higher ones, sitting atop the rolling Montaña de Naguaterique in an amazing setting of green mountains and cornfields. When West visited in 1957, he arrived during the local *feria* or fair, a celebration of locality and religion that fills the time between planting corn and harvesting it. I revisited the *feria* in 2001 to photograph the changes. Though the cultural changes that I learned about through the photos and by just being there are interesting and important, this is where I began to first think about the vegetation changes that I was starting to see in my rephotography efforts.

Figure 20. PP16; Santa Elena, La Paz.

Figure 21. PP17; Santa Elena, La Paz.

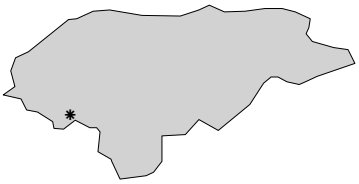
Two repeat photos appear here. One is an accurate repeat photo taken from the spot where West stood for the 1957 photo. The second, taken from a slightly different perspective, is included to show the area that makes up the bulk of the 1957 photo. Both show significant and interesting changes. PP16 shows the beginning of the religious procession through the town, wherein all festival goers bring the local patron saint – Santiago, the Moor killer – out of the church for a walk through the village. The first of the two 2001 photos shows the same scene during the same moment 44 years later. The view is blocked by new buildings, numerous vendor booths run by non-villagers, and an NGO-sponsored trash can, perhaps the most unexpected site in such a place. Beyond the buildings, though, are visible the tops of juniper and eucalyptus trees, since added. The second of the 2001 photos, though taken from a different spot, shows these better. The trees are out in front of the church along the fence of the health center, making them part of what I have chosen to call the "settlement forest" that is showing up throughout the country.

PP17 shows the religious procession leaving Santa Elena bound for Marcala, 18 km away. The 2001 photo shows an increase in vegetation, a flowering fencerow. Incidentally, rephotographing the procession walking out of town now would not be possible. They do not leave anymore. They do go to neighboring Marcala during another festival in September, but they go in pickup trucks now. As for changes of the festival itself, conversations with locals agree with what I observed and the photos show: the festival's focus has shifted from religious to commercial. Though many still attend the festival for religious purposes, most attendees are now engaged in

commercial activity. Only about 10% walked in the procession. The main street and the area in front of and around the church are lined with vendors' booths made from plastic tarps and long, thin logs. Piles of clothes, stacks of plastic buckets, and racks of tools and baseball caps fill the booths. Festival attendees, licking on ice cream cones and drinking cokes from clear plastic bags, browse and shop. In the 1957 photos, not one vendor or sign of commerce appears. Santa Elena seems to have entered the world of cash. Its festival, then, seems to have also.

Other assessments of vegetation changes in Santa Elena will be made in the second half of this chapter.

PP18



Marcala, a commercial center for highland southern La Paz department, has been an important coffee-growing region in Honduras for some time (see also PP44-PP46). Local informants agree that coffee most likely arrived sometime in the 1880s, if not before. This is supported by the fact that Marcala coffee was being exported to Germany by 1893, the first Honduran town to do so (Alcerro-Castro 1989). The importance of the delicious stimulant in the local economy and culture is ubiquitous in the local landscape, mostly in the form of a myriad of coffee wholesalers. As well, the town also sits deep within the Lenca culture region. The photo scene is of a street in the middle of the town, though in 1957 the street was on the edge of town.

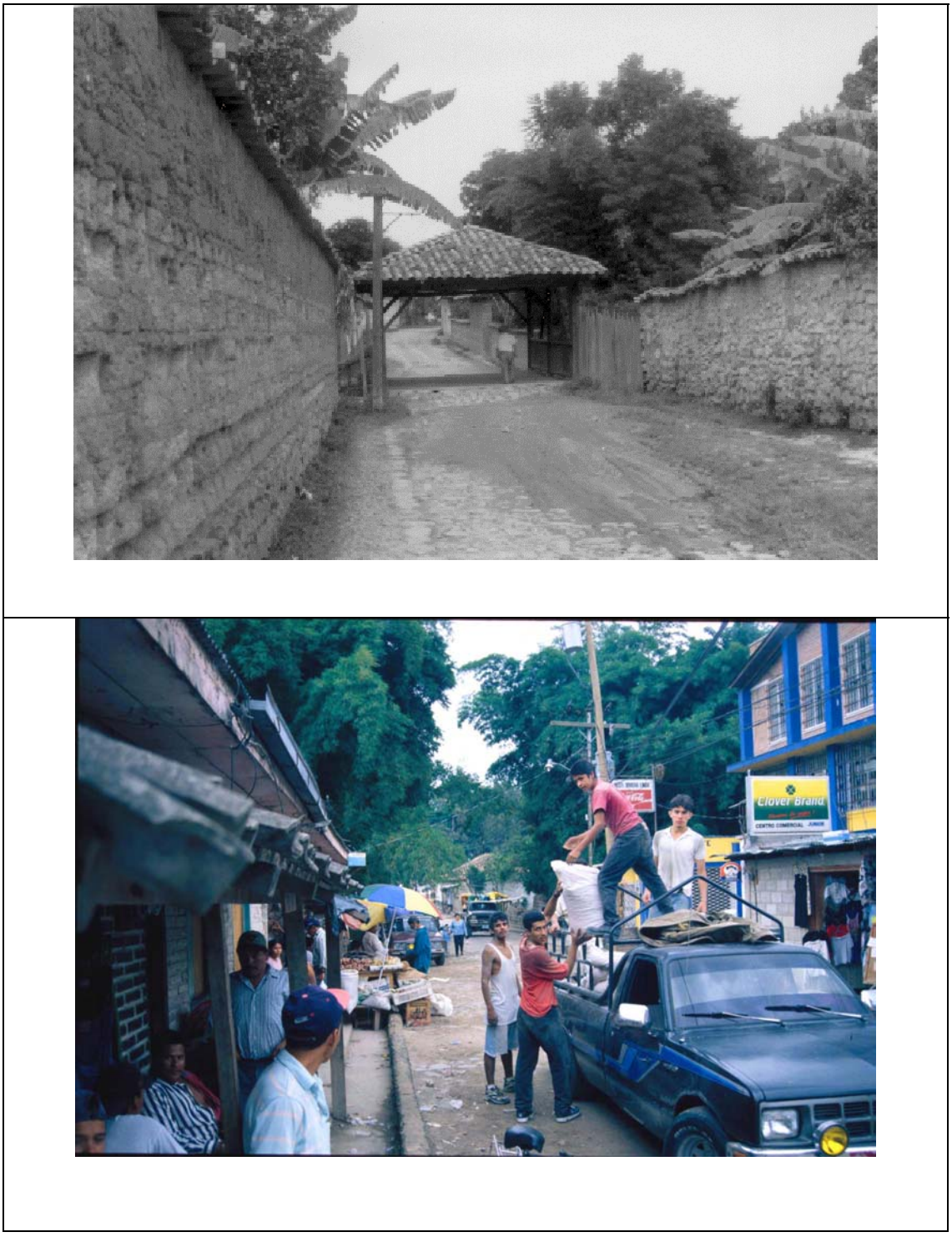


Figure 22. PP18; Marcala, La Paz.

Though significant vegetation increases appear as well, the greatest and most obvious changes in the photo are in the realm of commercialization. This is an important issue in this part of the world. Philip Wagner, in his study of the Nicaragua's Nicoya Peninsula (1961), indicated that what he called the "commercial revolution" (248) was just arriving to the area when he was there in the 1950s and that the implications it had for changes in land and resource use were great. This is probably true for much of rural Latin America now. Here, the new photo shows that, first, the town has grown to include this once marginal street in its commercial district. Second, it shows the character of that inclusion: stores, advertising, brands indicating global-local linkages, changes in resource access, changes in material culture, and, too, changes in vegetation.

The vegetation changes are perhaps not huge but they are important. The bamboo along the stream channel that the bridge crosses is far larger. As well, the vegetation to the left of the adobe wall in the 1957 photo appears much bigger in 2001. In 1957, the area to the left of the adobe wall was a *finca* (farm) that grew citrus and perhaps a little coffee. Today it is a market. However, the vegetation still appears to have increased. Relate this to the background of the photos. At the end of the road in the earlier photo, a tree appears. At the end of the road in the later photo, a much larger collection of vegetative biomass appears. This seems to be for two reasons. One reason is the seemingly recent increase in "domestic" trees; trees that appear in domestic landscapes. The other is that at the end of the road is the new plaza, or *parque*, as it is called, in which have been planted a number of trees.

Incidentally, this photo was one of the most pleasurable photos to retake because the locals there on the street got so excited about the old photo, in particular about the bridge. Groups of people crowded around me to see the old photo and to look up simultaneously at the current scene. "*Mire! El puente casa. No hay todavia. Que cheque!*" one of the gathering exclaimed (Look! The bridge house. It's not there anymore. How cool!"). The drastic and obvious changes that had occurred got people's attention, got them excited and got them remarkably nostalgic. Nostalgia, though nearly impossible to assess on any level, is important. It shows the cultural and emotional connections that people have to places, times, situations past and, perhaps more, their frequent discomfort with the present and the uncertain future that it will bring.

PP19

Guajiquiro, La Paz, at almost 1900m, is the highest Lenca municipio in Honduras (see also PP49). It is home to the Guajiquiro Biological Reserve due to the remaining but threatened cloud forest in the area. It is also, according to many Hondurans, many Honduran Lencas even, "the most indigenous place in Honduras. There are lots (*bastante*) of

Figure 23. PP19; Guajiquiro, La Paz.

inditos there. More than anywhere." Even in a place such as Santa Elena, La Paz, which is also monumentally Lenca, the people talk about how indigenous, how Indian, the people of Guajiquiro are.

Guajiquiro is beautiful. Sitting on a south-facing cliff among mountain pine forest interspersed with cloud forest patches, the wind does indeed whisper through the pines and across the guachipilin-studded corn milpas and occasional potato patch (see Brady 2001). Like most of Honduras, especially the mountainous, cool, indigenous west, Guajiquiro is also the focus of intense NGO activity. Thus, Dutch, Spaniards, and Americans can often be seen walking through the town's few dirt streets, their rented SUVs parked nearby. Their projects also show up in the landscape, mostly in the form of signs announcing their presence and intentions.

The church in Guajiquiro is an old and typical Latin American Catholic church. Its plaza in front is also typical, at least for Honduras. As the 1957 photo shows, the plaza was originally an open area – here grass, often dirt – for social gathering, marketing, political organizing, and, occasionally, for military parading (see Stephens 1841). This was true for plazas throughout Latin America and remains so for many, the plaza in Lima, Peru being perhaps one of the best and most beautiful examples.

However, as the 2001 photo of Guajiquiro shows, the plaza has taken a different form as well as a different role in Honduras. In 1992, the plaza was remodeled. It was also turned into a park. Indeed, throughout the country *la plaza* has become *el parque* or *el parque central*. As other photographs show, this has

happened throughout the country. Plaza areas were reorganized. Sidewalks were built through them, often focusing on a central fountain or gazebo. Fences were put around them. And, most conspicuously, trees were planted in them. In short, a very different kind of place was created by official action. The government of Rafael Callejas (1990-1994) did much for modernization in Honduras, especially in the realms of electrification, road building, water supply improvement, and school construction. The tree-filled plazas are a monument to this. In fact, many of them contain monument stones clearly stating such accomplishments.

When I showed the early photo to locals in Guajiquiro, they typically became very excited and nostalgic. "Ahhh! How precious, the church!" They also all professed to like the old look better than the way it was in 2001. However, when I asked about changes in the place in general, they also all asserted that things are better now. Sure, the kids are sort of a problem. "They are lazy. They don't want to work. They want to buy clothes all of the time. They won't work." Otherwise, the recent changes have brought a better life. "Now we have roads, vehicles, lights. We have televisions and music. We have movies. Do you like 'Yon Klah Van Danh'?" Taking this photo while listening to a blaring backdrop of Nazareth's "Love Hurts" made me uncomfortably aware of this modernization. It also left me unsure of how to think about the small towns and villages of modern Honduras, Honduran culture, and, in this case, Lenca identity.

PP20-PP23

Comayagua, Comayagua was for a long time (1561-1880) the administrative center for Honduras (see also PP52). Founded in 1537 in the broad valley of the Rio Humuya, Comayagua remains an important place. Some think that perhaps the country would be better served if the capital were returned here, thus relieving some of the pressure from overcrowded Tegucigalpa. Perhaps.

Photo PP20 shows one of three neighborhood churches in Comayagua, Iglesia San Francisco. The early photo shows the open plaza of the colonial built environment with the church beyond. The recent photo shows the reorganized modern plaza with its small settlement forest. The spray-painted words are gang graffiti. The significance of the trees was discussed previously (see PP19).

The other photos show little change in vegetation. PP21 shows development of both the transportation and communication infrastructures. PP22 shows both modernization or development of these too, as well as an adaptation of the existing landscape to fit this, as the corner of the building has been rounded to accommodate turning traffic. The vegetation beyond the building has increased in size. PP23 does show a very slight increase in biomass beyond the house. Otherwise, the photos mostly illustrate the modernization that has occurred: electrification, street improvement and vehicles, and refurbishment of the built environment. The plantain

Figure 24. PP20; Comayagua, Comayagua.

Figure 25. PP21; Comayagua, Comayagua.

Figure 26. PP22; Comayagua, Comayagua.

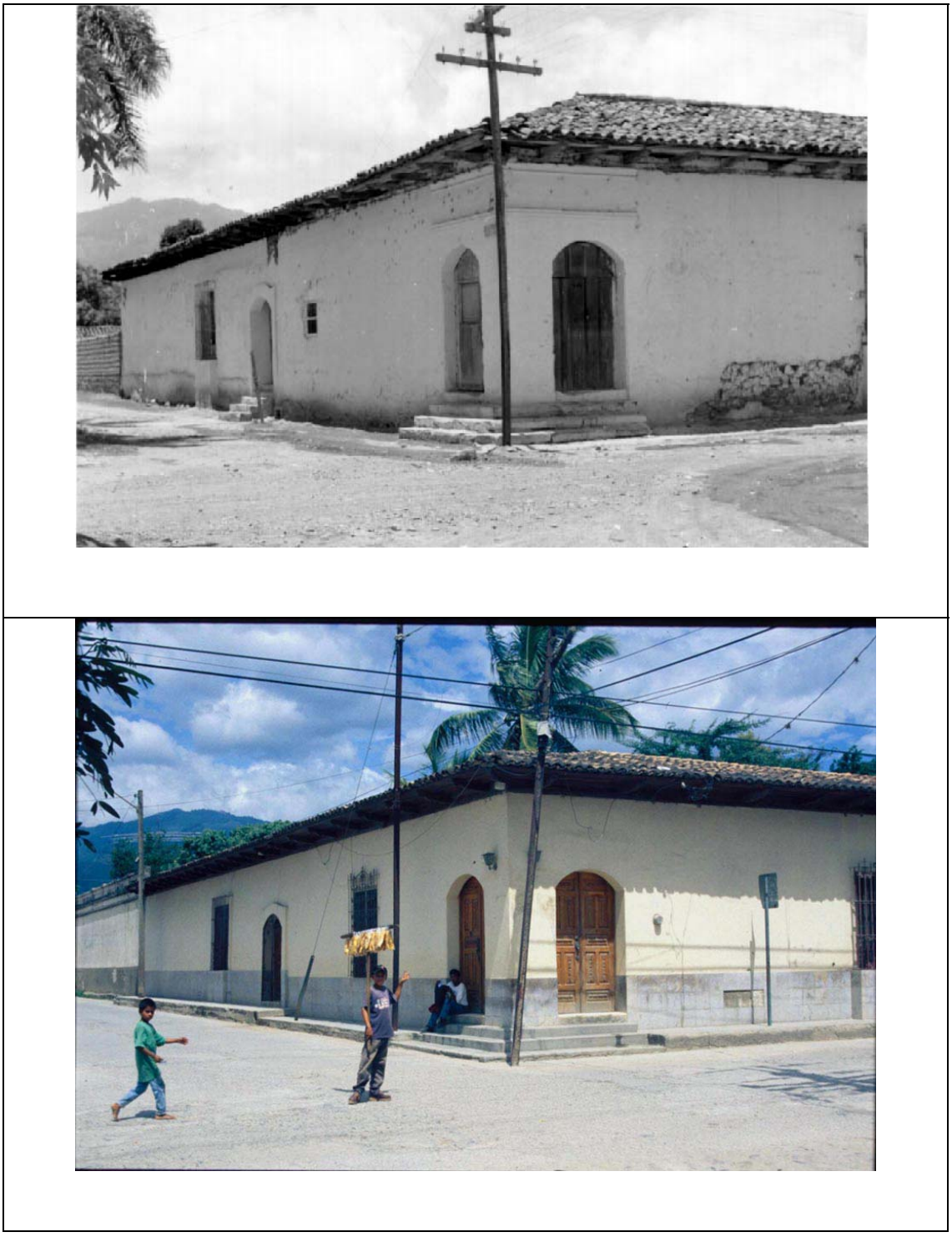


Figure 27. PP23; Comayagua, Comayagua.

vendor in PP23 is wearing a shirt that reads "USA" and holding his hands to symbolize gang affiliation, whether actual or hoped for. The house in the same photo appears to have been modernized but reflexively, making it look "olde" (Giddens, Beck, and Lash 1994).

PP24

Lepaterique, Francisco Morazan sits directly west of Tegucigalpa. It is a high town at nearly 1500 meters, cool, breezy and surrounded by pine forest. Thus, the town is a center for the timber products industry, mostly lumber and pine resin. The Honduran forest agency, COHDEFOR, has a training/conference center in Lepaterique. Photo set PP24 shows the church but offers little change to assess except for the refurbished church façade. Some trees to the north of the church have been removed while a new juniper has appeared on the south side. The new façade, once its funding source is realized, does offer insight into globalization in the landscape. FHIS (*Fondo Hondureno para Inversion Social*), an enormous government agency responsible for modernization and development throughout the country, paid for the church's refurbishment. However, FHIS is funded practically completely by outside sources, mostly foreign governments and agencies such as the InterAmerican Development Bank (Presidencia de la Republica 1991). The money is split between gifts and loans. Thus, the new

Figure 28. PP24; Lepaterique, Comayagua.

face of Lepaterique's church is a landscape of global financial networks, so to speak. Other changes in Lepaterique will be further assessed in the second part of this chapter (PP57). Aerial photograph analysis of the area also appears later.

PP25 and PP26

Cedros, Francisco Morazan is an old colonial mining town directly north of Tegucigalpa (see also PP56). The town sits just up slope from the wide Siria Valley. The landscape of colonial minings towns such as Cedros is distinctive: thick-walled, whitewashed abode buildings, red tile roofs, and cobblestone streets all sitting on the side of some mountain which once tempted men with its potential to enrich. According to local historian Don Roberto Ramirez, Cedros was founded in 1537 as a mining center for nearby silver and gold deposits. Most of the mines have been abandoned for about 200 years, though a Canadian company is now operating a large mine nearby in the Siria Valley. Cedros is quaint and beautiful but poor and little known. Its claim to fame is that it was the first capital of the newly independent Republic of Honduras in 1824. The first congress was held there on August 29, 1824 but only 24 hours later the so-called capital was relocated.

PP25 shows a street scene one block from the plaza. The new photo shows that electricity has arrived, that transportation is now more likely to be by motorcycle

Figure 29. PP25; Cedros, Francisco Morazan.

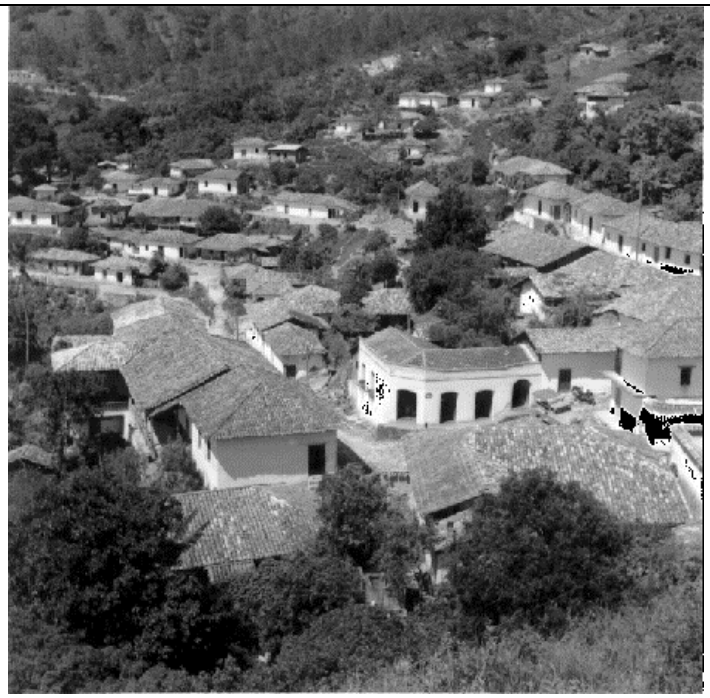


Figure 30. PP26; Cedros, Francisco Morazan.

or pickup than by mule, and that a tree (*Ficus sp*.) has been consciously planted. PP26 shows that many more trees have also been planted. The site is a hill looking down over the town. (Photo PP56 shows the rest of the view.) A public space, the hill has been landscaped into a park, with paved walkways, benches and lots of trees. The recent photo shows some of the trees that have been planted and, consequently are blocking the view. This is again part of the tree planting ideology discussed in PP19. Many of the trees in this park are decorated with wooden signs extolling the virtues of trees and forest and the pertinence in planting and caring for them – a landscape of conservation ideology.

Sitting and drinking a coke in the open door of the building where Honduras' first congress was held in 1824, I watched a mule loaded with firewood sticks follow a small boy over the uneven cobblestones. The whitewashed wall across the narrow street was blinding as it reflected the late morning sun. A bus horn blared from the other end of town as a pickup truck rattled slowly toward me. Across its windshield, a sticker read "CHICO BOSS OF THE USA". Eric Clapton's "Cocaine" came through the open door of a house down the sidewalk.

The *señora* of the house and the store in its front room talked about her town. She was quick to say how *sano* (sane) it is and asserted that is has barely changed.

"It's the same for years. Almost nothing changes." The one thing, she offered up, that has changed is this: "It is not as cool as it was years ago. It's hotter now," she affirms.

"Really?" I asked. "Why is that?"

"Look around," she responded.

I did.

"It's because of all of the deforestation. We have cut all of our forest and so it's hotter now."

I looked around. Off in the distance, the Siria Valley was definitely without forest. But this is not recent. Closer by, the hills around Cedros actually appeared to have pretty substantial forest cover on them. I saw little evidence of rampant deforestation. However, she assured me that they had cut it all down, thus changing the climate. Where did she learn this? Other people throughout the country told me the exact same thing, in nearly the exact same words. It almost seems that someone taught them.

PP27 and PP28

Ojojona, Francisco Morazan is another old former mining town. However, it is just south of and much closer to Tegucigalpa than Cedros. Thus, it much more accessible and has consequently become a popular site for weekend tourists from the capital. As the photos show, the town has modernized to some degree and vehicular travel is now much more important. Vegetation has probably increased somewhat in the town, as the photos imply. In PP27, public plantings appear in the foreground both as leaves and as

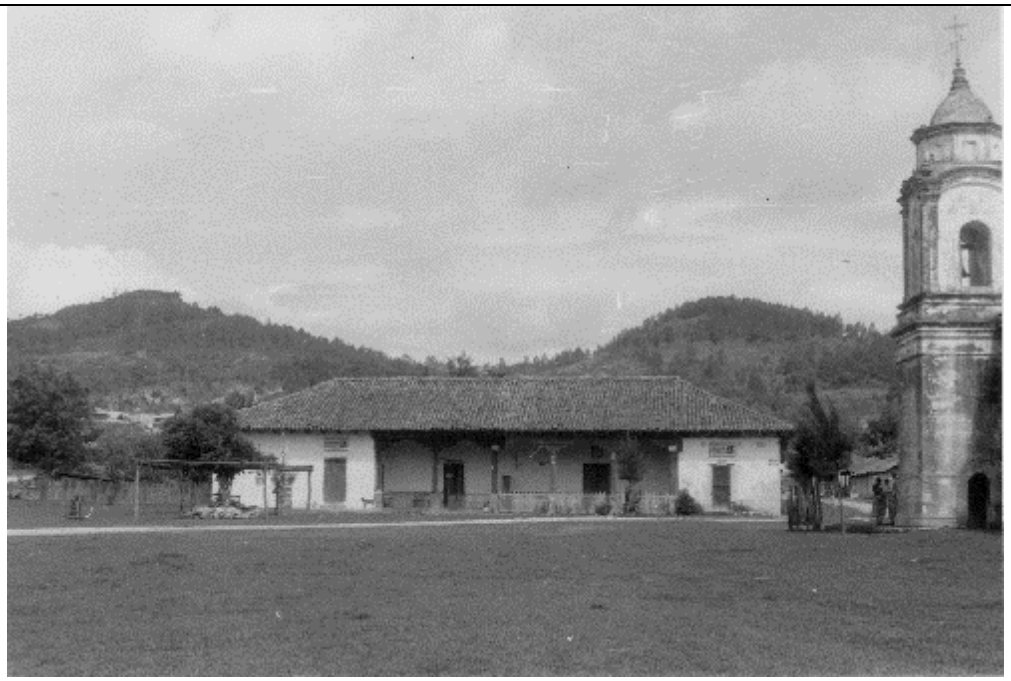


Figure 31. PP27; Ojojona, Francisco Morazan.

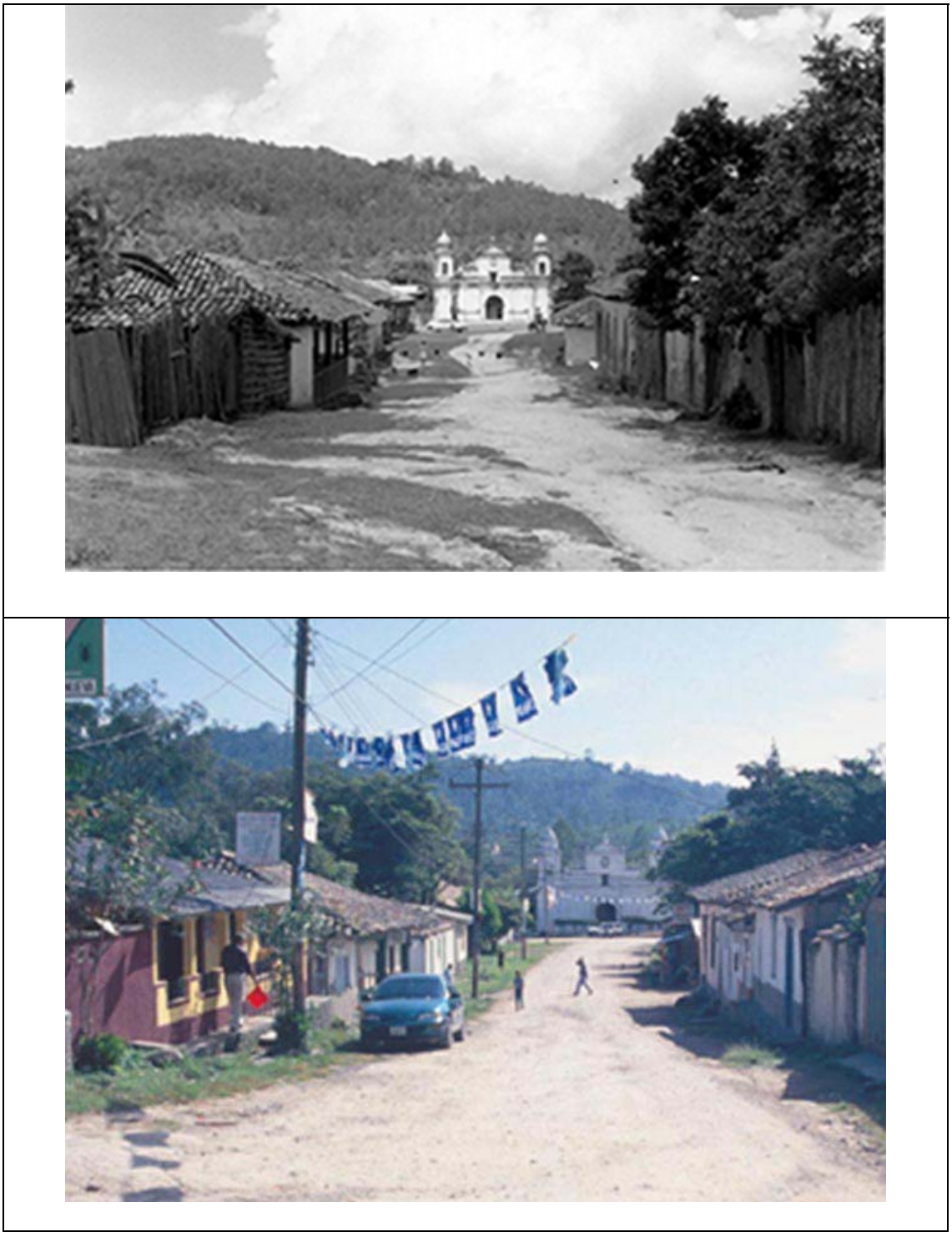
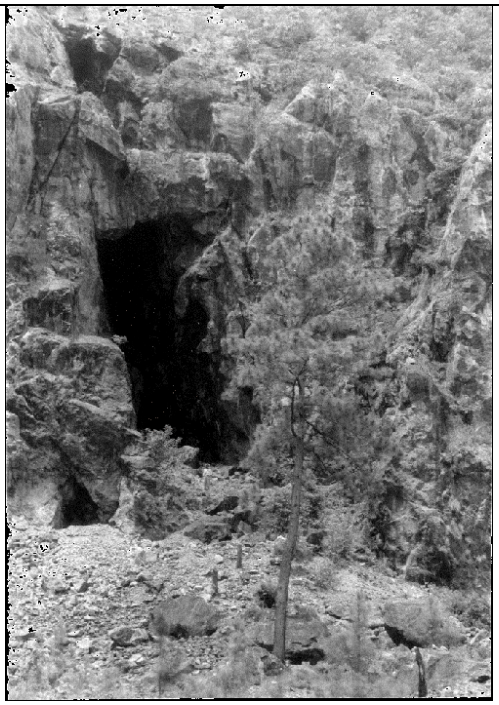


Figure 32. PP28; Ojojona, Francisco Morazan.

shadows. Juniper and other trees just beyond the bus were saplings in 1957. PP28 shows some increase in domestic vegetation, but also some that has been replaced by houses. Incidentally, the house in the center of PP27, built in 1723, burned in May 2001 just before my arrival, as can be seen in the newer photograph.

PP29

Just south of Ojojona, as the rugged mountains drop towards the Gulf of Fonseca, is an old mining center, the Cerro de Guasucoran (see also PP58). The hill was once covered with functioning Spanish mine shafts and raised roadbeds for transporting equipment and ore. Now mostly reforested in pines, the hill is still crossed by the raised roadbeds and dotted with old abandoned mineshafts. The photos show one of these mineshafts. In the new photo, the shaft can be seen behind the new growth of pine trees, at the base of which sit the kids who guided me to the site. Though not a large area of vegetation increase, the photo does show more and bigger trees and, likewise hints that some landscapes in Honduras indeed have recently seen increases not decreases in vegetation and forest cover.



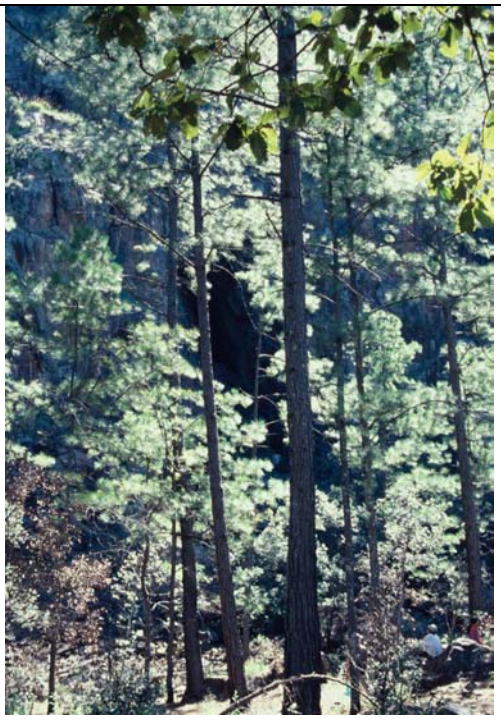


Figure 33. PP29; Guasucaran, Francisco Morazan.

PP30 and 31

Tegucigalpa, Franciso Morazan is the capital of Honduras. The city sits in a bowl-shaped depression at the confluence of the Rio Choluteca and the Rio Chiquito. It was also an early mining center, focused on the slopes of Picacho, visible in the right background of PP30. Tegucigalpa replaced Comayagua as the national capital in 1880, partly at the behest of North American mining companies who operated nearby.

Recently the city has exploded in population, putting pressure on its physical and social infrastructures as well as virtually destroying the water that flows through it in the two rivers. The two photos only hint at the recent changes. PP30 actually shows very little. The original photo seems to have been taken from the bridge that was in 2001 being rebuilt in the new photo – with Japanese money nonetheless – after it was destroyed by Hurricane Mitch in 1998. The national stadium appears in the new photo and a bit of urban growth appears up the slopes of Picacho which, however, has retained most of its pine forest. Fortunately, photographs still cannot depict the olfactory, thus protecting the viewer from the river below.

PP31 is a bit more telling and interesting than PP30. The view looks from a place known as *La Isla*, just below the national stadium, across the Rio Chiquito toward *El Centro*. A huge increase in vendors and vehicles shows the modernization

Figure 34. PP30; Tegucigalpa, Francisco Morazan.

Figure 35. PP31; Tegucigalpa, Francisco Morazan.

and growth that is happening. Geographer William Davidson remarked that most of the congesting vendor colonization in this part of town occurred after Hurricane Mitch. The tree that once grew in the middle of the street is now gone. However, the trees that grow along the riverbed have grown up considerably. The photos, then, suggest a net increase in vegetation.

PP32

To the north/northeast of Tegucigalpa, old mining towns dot the steep landscape. Santa Lucia, just a few kilometers away and uphill from the capital, is one of these. It is accessible and close enough to have become a weekend tourist getaway as well as a bedroom community for some of Tegucigalpa's better off.

It has the characteristic mining town landscape of whitewashed adobe, tile roofs and cobblestone streets. The early photo shows one of the town's few streets and a colonial house with vegetated hill slopes beyond. The new photo shows some modernization, the marker of a won battle in the global cola war, and very little change in vegetation. Perhaps the most significant change is in the public plantings that appear. However, see PP63 for another perspective.

Figure 36. PP32; Santa Lucia, Francisco Morazan.

PP33

A bit farther up the road and upslope from Santa Lucia sits another former mining town, Valle de Angeles. Valle, sitting up high in pine covered mountains, is especially popular with tourists, both Honduran and foreign. Missionary groups operate from here and the Peace Corps conducts much of the training for new volunteers here. The photo shows an old silver refinery just out of town. When I finally found the site and went to photograph it, I thought that nothing much had changed. However, when I returned to the U.S. and began to compare the two photos, I realized that the vegetation in the photo had indeed increased significantly.

PP34

About 30km east of Tegucigalpa and just north up out of the Zamorano Valley sits one of the colonial mining towns most familiar in image to Hondurans and visitors to the country. San Antonio de Oriente was where a painter named José Antonio Velásquez painted bright colorful paintings of the quaint whitewashed town with its cobblestones and

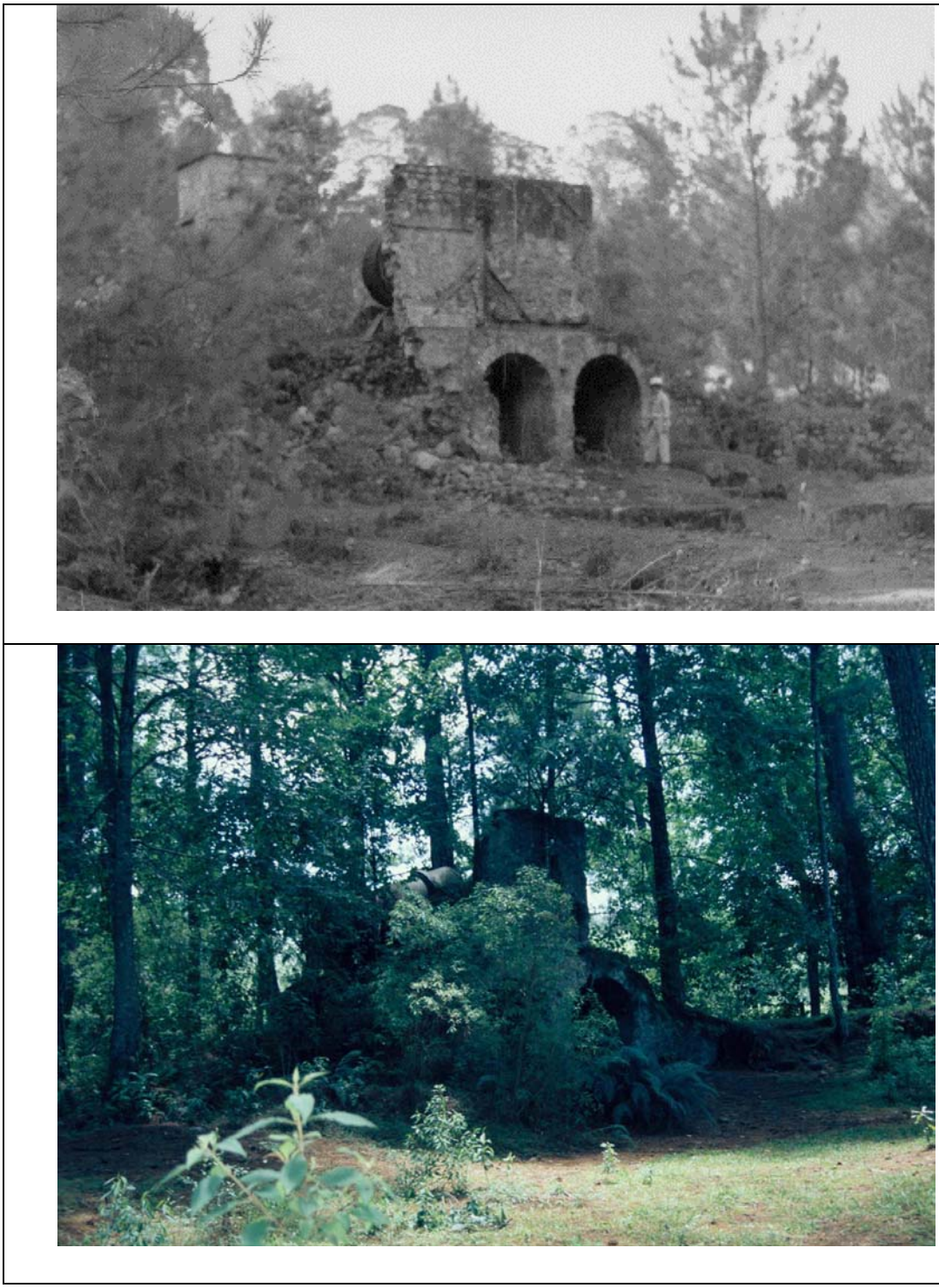


Figure 37. PP33; Valle de Angeles, Francisco Morazan.

Figure 38. PP34; San Antonio del Oriente, Francisco Morazan.

overlooking church (Figure 39). His paintings influenced others and eventually a style developed from it that is now copied by various artists. The town itself is little known to outsiders. Again, the town has the characteristic colonial mining town landscape. Again, little has changed beyond the arrival of a road, electricity and North American Protestant missionaries. The hill slope above the church seems to have maybe lost vegetation (also see PP65), though settlement vegetation appears to have increased.

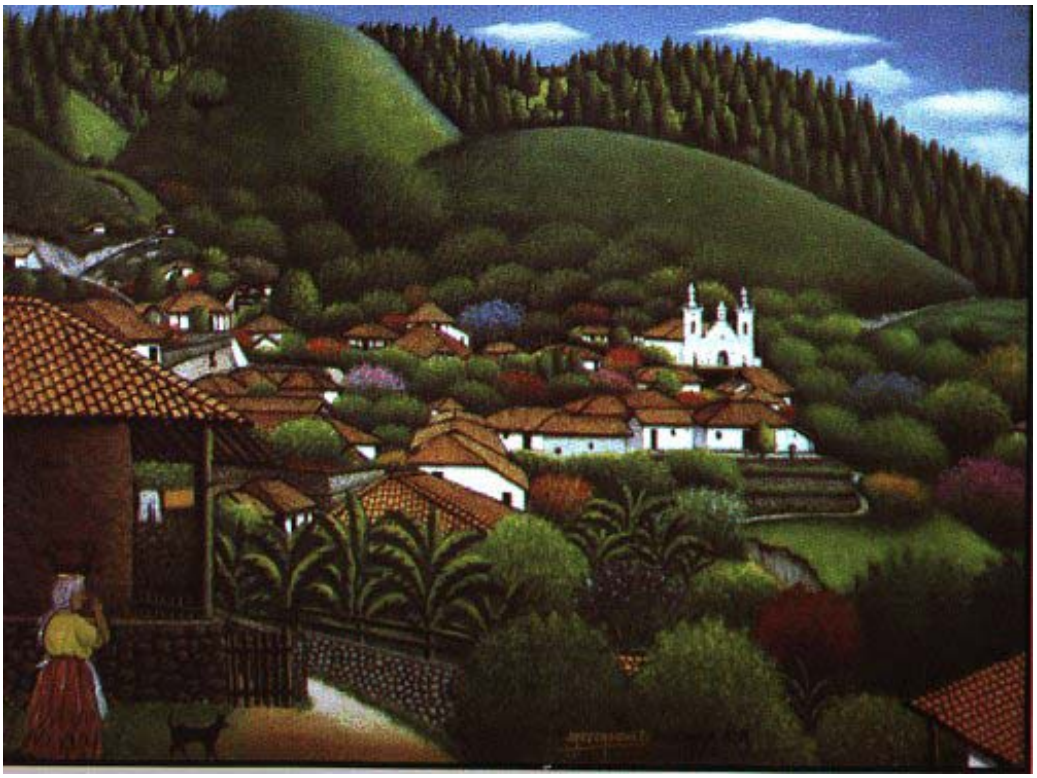


Figure 39. San Antonio de Oriente painting by Jose Antonio Velasquez (Adapted from Fullerton Museum Center, City of Fullerton, http://www.ci.fullerton.ca.us/museum/archive/naive.html).

PP35

Farther to the east, Yuscaran is the administrative center for the Department of El Paraiso. It is yet another former colonial mining center. Behind it, the hill that once held the town's riches, Montserrat, has recently become a national park and is covered with a pine forest which becomes thicker with elevation. The town is a manufacturing center for several popular brands of *aguardiente* and, also easily accessible, is a popular spot for Honduran tourists. It is also beautiful. The photos show the changes that have now become familiar: a pickup, a mountain bike, a refurbished town façade, and a slight increase in vegetation, again due to recent landscaping of public space.

PP36

Far in the southern tip of the Department of El Paraiso, on the low slopes of the *tierra caliente*, the town of Texiguat sleeps. It is relatively isolated from the rest of the country due to poor roads, little traffic, and less money. Changes in the landscape around the town are further assessed in PP66. However, these photos show another 1957 view across an open plaza space and a 2001 view of a new planting of trees there which

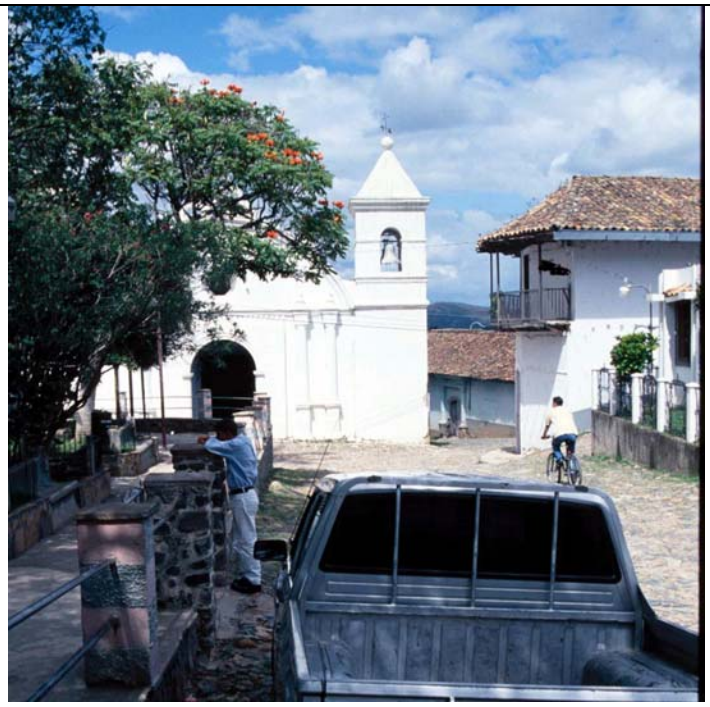


Figure 40. PP35; Yuscaran, El Paraiso.

Figure 41. PP36; Texiguat, El Paraiso.

add shade, block the original view, and advertise the virtues of trees. They also, perhaps, turn the plaza from public space to public place (Tuan 1977).

From Afar

This second part of the photo analysis examines changes in the photographs that are of a broader perspective. Again, they are organized roughly from west to east through Honduras. These photographs offer perhaps more comprehensive landscape areas to assess due to their broader field of vision. Thus, they also perhaps offer more insight into the state of the landscape in general and into what has changed in it over the past half-century.

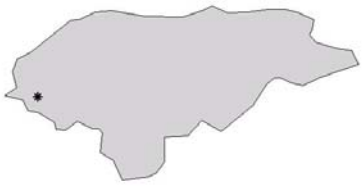
PP37

La Campa, Lempira is directly south of Gracias. Local Lenca have long made pottery that they sell in the market at Gracias on Sundays, though most of it now arrives there in the backs on pickups rather than on the backs of people (see PP4). The town sits in a depression against a ravine. The photos were taken from above the town along the old road[4] looking south.

[4] The biggest challenge in rephotographing the West photos was finding the sites. Even though the photos are labeled, the specific spots or vantage points are not identified. One of the greatest changes in Honduras since West's 1957 visit has been the building of new roads. West's travel was on old roads, often merely mule trails. As they were probably very old, perhaps preHispanic routes, these roads also tend to be steep and more direct – "as the crow flies (or, almost, as the Indian walks)" (Wagner 1962: 37) – than newer roads designed for vehicles. Many of these roads have been replaced. Many of them and the physical conditions around them have changed significantly.

Figure 42. PP37; La Campa, Lempira.

The most obvious changes between the two photos are the addition of the new road running through and then out of town to the south toward San Manuel de Colohete and an increase in vegetation in and on the slopes around the town (see also Southworth and Tucker 2001). In West's description of the 1957 photo, he described the surrounding slopes as "montana forest in distance almost completely cleared for cultivation." This has apparently changed. The new trees in the town are a mix of natives and imports, including lots of eucalyptus. Outside the town, most of the increase appears to be in pines.



PP38

La Esperanza, Intibuca (see PP12-PP14). The view looks east across the town from *la gruta*, a small cave or niche in the hillside whose religious icons watch over the town. In the distance to the left appears the Cerro San Bartolo, now, as the photos show, being mined for construction material. The town has grown, spreading to the east, as well as in other directions not visible in the photo. Too, the town and its surroundings have more trees now than before.

Consider three aspects.

First, the plaza (as per PP19) now has trees. It is the same as other plazas, having been

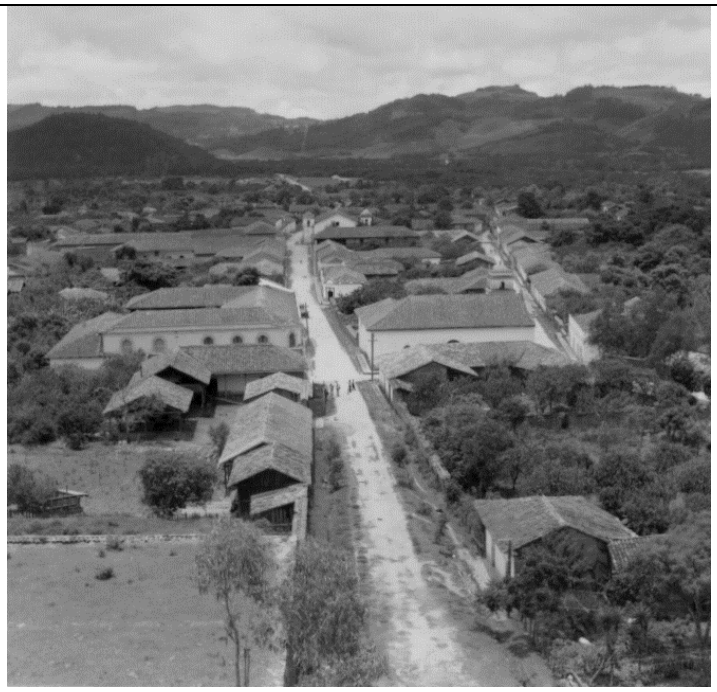


Figure 43. PP38; La Esperanza, Intibuca.

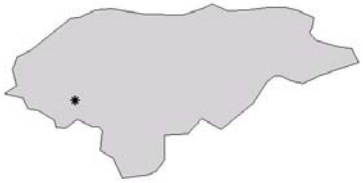
landscaped and filled with fast growing trees, in this case, conifers. These trees likewise hold signs advertising the virtues of trees and forests to passersby.

Second, in the bottom left half of the 1957 photo, an open yard appears behind a house, just beyond the empty, grass-covered terrace. In the new photo, the vegetation there has increased. Trees have both grown larger and been added. Though I cannot completely explain why it is occurring, I noticed that, particularly as towns grow, they show an increase in tree cover in the town, the "settlement forest" effect, much of it in private yards. Though the area in the photo is not large and does not show a significant increase, and though the area just across the street from the one just described has actually lost its tree cover, I feel it pertinent to point out and describe the phenomenon here, as it will appear again. Most of the trees in such situations are flowering, fruit, or shade trees, if not all three.

Third and probably most significant are the hill slopes beyond the town to the east. In particular, those to the right, which are not blocked by the Cerro San Bartolo, show an increase in tree cover.

PP39

Hacienda Ramirez sits just outside of San Antonio, Intibuca, a village upstream from Jesus de Otoro on the river of the same name. The hacienda, according to its *mayordomo*, is more



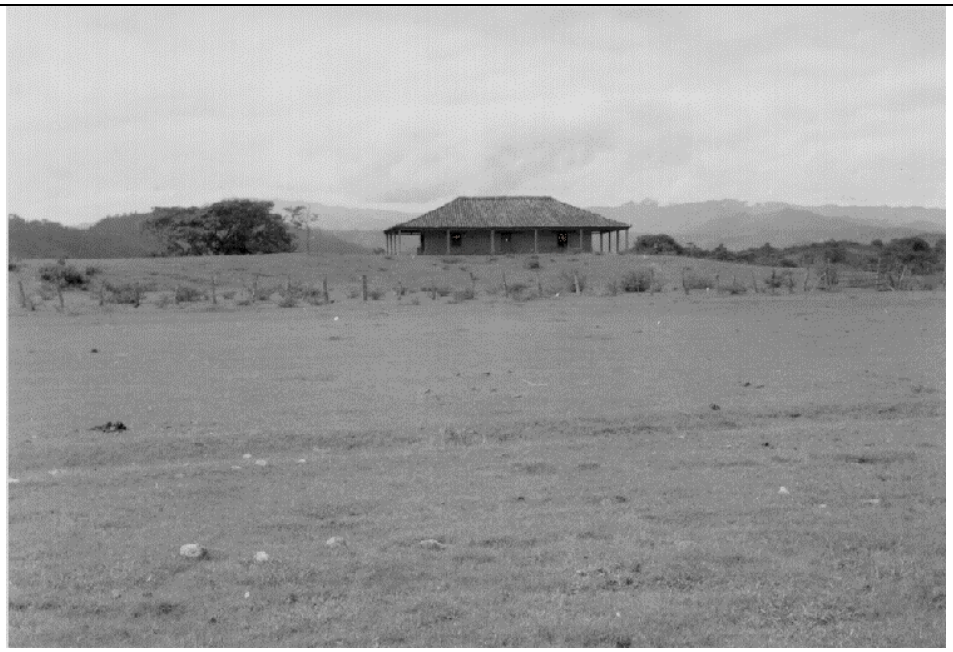


Figure 44. PP39; Hacienda Ramirez, San Antonio, Intibuca.

than 100 years old. The trees in the earlier photo have grown larger and others have since appeared around and near the house, or *casco*.

The "[s]avanna pasture in [the] foreground" (West 1995) has been replaced by rice. Implemented by a Taiwanese NGO, the Otoro Valley has several wet rice producers. The fields are constantly flooded by canals though they are not bunded and, thus, cannot "hold" water. They might be called "half-paddies" and are most certainly landscapes of globalization. The *mayordomo* of the hacienda showed me the rice field. He said that they have been growing rice on the hacienda for nine years but that 2001 was the first year back after a two-year hiatus. Apparently, the food aid that flooded Honduras after Hurricane Mitch, much of it rice, destroyed the local rice market and consequently put some growers temporarily out of production. This first year back, though, was no better. Though they are flood irrigated, because the fields are not bunded they also depend on rainfall. 2001 was a particularly dry year and so the rice did not grow well. As I thanked him for the tour and prepared to leave, the *mayordomo* told me that soon after I left, he would turn the cattle out into the rice field. The crop was a total loss for the year.

PP40 and PP41

PP40 shows the main street of Santa Elena, La Paz (see PP16 and PP17) during the *guancasco* religious procession. The 1957 photo shows the

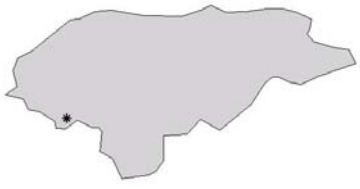


Figure 45. PP40; Santa Elena, La Paz.

Figure 46. PP41; Santa Elena, La Paz.

actual procession. The 2001 photo, also taken during the procession, shows the vendor booths and their customers that are the focus of the now commercial festival. The procession actually skirts the town now because the commercial activity allows it no passage. The new photo also shows trees that were not there in 1957, most of them juniper. These trees were planted relatively recently. Also visible are hill slopes in the background. Though the slopes are not completely clear in the 1957 photo, they do appear to have more trees in the 2001 photo.

PP41 overlooks the town from its cemetery to the northwest. The town has obviously grown since 1957, as has its tree population. Again, mostly juniper and eucalyptus, these trees have been recently planted. Though trees do appear on the far slopes in the 1957 photo, this also appears to have increased. Aerial photographs of the area were analyzed but with inconclusive results.

PP42

Between Santa Elena and its neighbor, Yarula, are two *llanos* or *chagüites*, poorly drained highland swales. West (1995) noted that, "[t]he swale is used only for grazing livestock on the aquatic grasses and sedges. Crops are cultivated on the surrounding slopes cleared of montana forest of oaks and laurels.

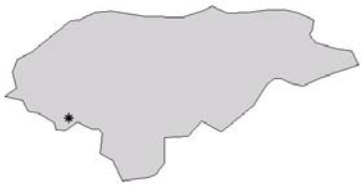


Figure 47. PP42; Llano Yarula, La Paz.

Elevation of *chagüites* in western highlands of Honduras varies between 1200 and 1800m." Most of what he wrote still holds true. The sediment filled swale is still wet and still used only for grazing, mind the occasional soccer game. Surrounding slopes still support crop raising, though with two changes. One change, not really visible in the photo is the recent addition of coffee to the slopes. Coffee has long been important in nearby Marcala but has only recently been embraced by folks in rural areas, especially in areas such as Santa Elena that are supposedly too high for coffee production.

The other change, indeed both visible in the photos and significant, is that the area covered by trees has grown. In fact, the 1957 photo shows only one tiny patch of trees in the upper left and a few shrubs in the upper center. The patch in the upper left, a stand of oak and laurel, has expanded. The shrubs in the upper center have become a small forest. As well, other smaller patches of trees appear, as well as scattered tree growth on the lower part of the slope. The vegetation increase on the far slope appears to be perhaps between 800% and 1000%. Indeed some of this growth is because oak shrubs appear to have been allowed to simply keep growing. Others, though, appear to have been planted. I spent some time on the far slope trying to find out why so many more trees are now there.

I heard his metal hoe chink against several rocks before I saw him. I topped a rise in the giant, dibble-planted cornfield, and saw the Lenca man hoeing up feral mustard greens. He stood up and leaned on his hoe, smiling, as I approached. I stopped near him and we exchanged greetings, briefly touching our palms together in

a gesture of shaking hands. We briefly discussed his corn and how lucky the people in the area were not to have been affected too much by the recent drought. Then I asked him about the small oak forest behind him. He nodded toward it and confirmed for me that it was indeed bigger than it had been. "It's a small forest. The trees, the forest, are good. Good for the air, for the animals, for the rain, the temperature." He told me that, owned by a local man, it was used partially to supply firewood and construction materials for locals. I asked him if it would be alright for me to go check it out. He nodded assuredly, "Of course." Then, looking back toward it, continued, "It's beautiful, the forest. We need forest here. It's good."

I continued my walk to the tree patch. It was a small, fenced oak-laurel forest patch with only minimal underbrush and a few birds. I stood in the shade at its edge and looked over at another hill. There at the top was the small patch that appears in the top center of the photo. I headed for it.

Two teenaged girls were hoeing the cornfield next to the tree patch when I appeared up the red dirt trail. Their bright clothes seemed to glow against the green corn plants. They immediately stopped their work when I appeared. I asked them if they knew anything about the tree patch next to me. After a short glance at each other and a shorter giggle, they simply pointed to an adobe house downhill from the field. I thanked them and headed down the hill, crunching old, dead corn stalks at the field's edge as I stepped. The girls resumed their hoeing and continued their giggling.

At the barbed wire fence, I looked up to see a big dog hurrying across a packed earth yard, hopping a handmade palmetto broom as he came after me. From a

hole in the adobe wall, a woman's voice yelled at him to stop and then at me to tell her what I wanted. I crawled through the barbed wire, watching the dog, and crossed over to her window. I told her that I had old photos of the area and tried to show one to her. She glanced at it, but only briefly seeming to be afraid to keep her eyes away from me. I told her about the increase in trees and asked her about the two new patches near her house.

She nodded across the barren earth of her yard littered with the implements of getting by: clay oven (*horno*), corn storage bin (*secadora*), a wooden ox cart with big solid wood wheels, a steel wedge and wooden mallet for splitting firewood, and lots of skinny chickens. And the dog. She said that the man who owned the land there had let the trees grow up. He had fenced it off to keep animals out and had essentially raised a forest. She said that he sells the wood for both firewood and construction materials, "because we are poor here –*pobrecitos*. We are poor so we still have to cook with firewood."

I asked about the other tree patch, the one I had walked past up on top of the hill. Her face lit up. "That's mine," she smiled, showing a collection of teeth that alternated between black and implanted gold. "I planted it." She told me that she planted the patch of *tatascan* trees (*Perymenium strigillosum*) for fence posts. Standing in even rows, the trees are young and not very big. She said that they need lots of fence posts because they have so much barbed wire fencing. Though fences often follow old "living fences", barbed wire is the rule now and this requires fence posts, again … "because we are poor – *pobrecitos*. We have to make everything.

This house, our meals, firewood, everything. We are poor here." Though self-deprecating, she smiled a lot. She left the dusty windowsill and came outside to hold the dog so I could leave. On the road down in front of the house, two five year old boys were leading a horse along on their way to somewhere.

Two things seem to be going on there on the slopes around the Llano Yarula, as it is called. As well, these two things seem to be relevant to changes that I observed in other parts of the country. The first is that some of the trees, in particular the two largest patches and the small one on the ridge top in the center left of the photo, are being essentially used as crops. In 1995, 95% of rural Hondurans still used firewood as their primary source of energy, making up 60% of the country's total energy consumption (UNPD 2000). The Lenca highlands are among the country's poorest areas and remain very rural in character. Thus, people in the area still depend on firewood for cooking energy, often without depending on chimneys to vent the smoke.

Second, timber for firewood and construction apparently is increasingly difficult to come by in the area. To be sure, forest cover is sparse. However, the area is increasingly, especially with the entry of the new road, bus service, NGO development activity, electricity, and immigration of locals to the U.S., developing and entering a cash economy. People are buying stuff. They have televisions whose advertisements teach them that this is good. They buy Coca-Colas daily, though they have trouble paying the $1 per month water service fee. Might the increase in trees be a function of economic diversity?

On the far slope in the photos are two other changes. One of them is probably most responsible for every other recent change in the area: a new road. It crosses the hill at the small "pass" to the right of the tree patch in the upper left. It carries vehicle and bus traffic daily between the area and Marcala as well as points beyond. The road may also be partly responsible for the second change, which is itself closely related to the changes in tree cover: an increase in settlement. On the slope can be barely discerned a settled landscape not visible in the early photo. Like the settlement forest phenomenon that we see in other parts of Honduras as well as in the U.S., these settled landscapes have been planted in trees. Some of the trees produce food, some flowers, others merely shade. Regardless of what grows on them, though, they are apparently important. In open areas, this domestic space appears to be an oasis of forest. In closed, forested areas, it appears to be a cleared space, breathing room. We like trees. We plant them around our houses. An increase in settlement and houses may bring an unexpected and even unnoticed increase in trees. Again, see photo set PP41 as well.

PP43

Just to the north of Santa Elena and of the Llano Yarula is Yarula itself. The sister town of Santa Elena – they look across at each other from

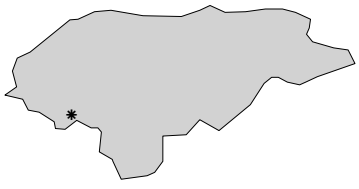
Figure 48. PP43; Yarula, La Paz.

their high perches, – Yarula shares many of the same characteristics, though it has a more tightly ordered layout. The photo looks south toward but just to the west of Santa Elena. In the foregrounds, buildings show modern changes in material culture, as do the fences. An electric line runs down the hill toward the new road to Santa Elena, also visible in the distance. But, like PP42, it is the background slopes that show significant change.

This is where I had the conversation that I included in the introduction to this study, where I looked out at the view in the new photo while holding a copy of the 1957 photo as a local resident told me about how they had cut down all of their forest in the past 50 years and, consequently, changed the local climate to hotter and drier. In the background of these photos, though, the tree cover has not been deforested. Rather, it has increased. The nearest patch in the photo just across the tile roof is mostly oak and laurel. A house sits just up the visible driveway that runs to the right/south of the tree patch. Its residents do not own the land and so could not tell me exactly why the trees were allowed to grow up but they do use them for firewood. Overall, the photos show a net increase in trees.

PP44-PP46

Marcala, La Paz is the coffee producing center featured in PP18. It has grown significantly since 1957, in part due to the



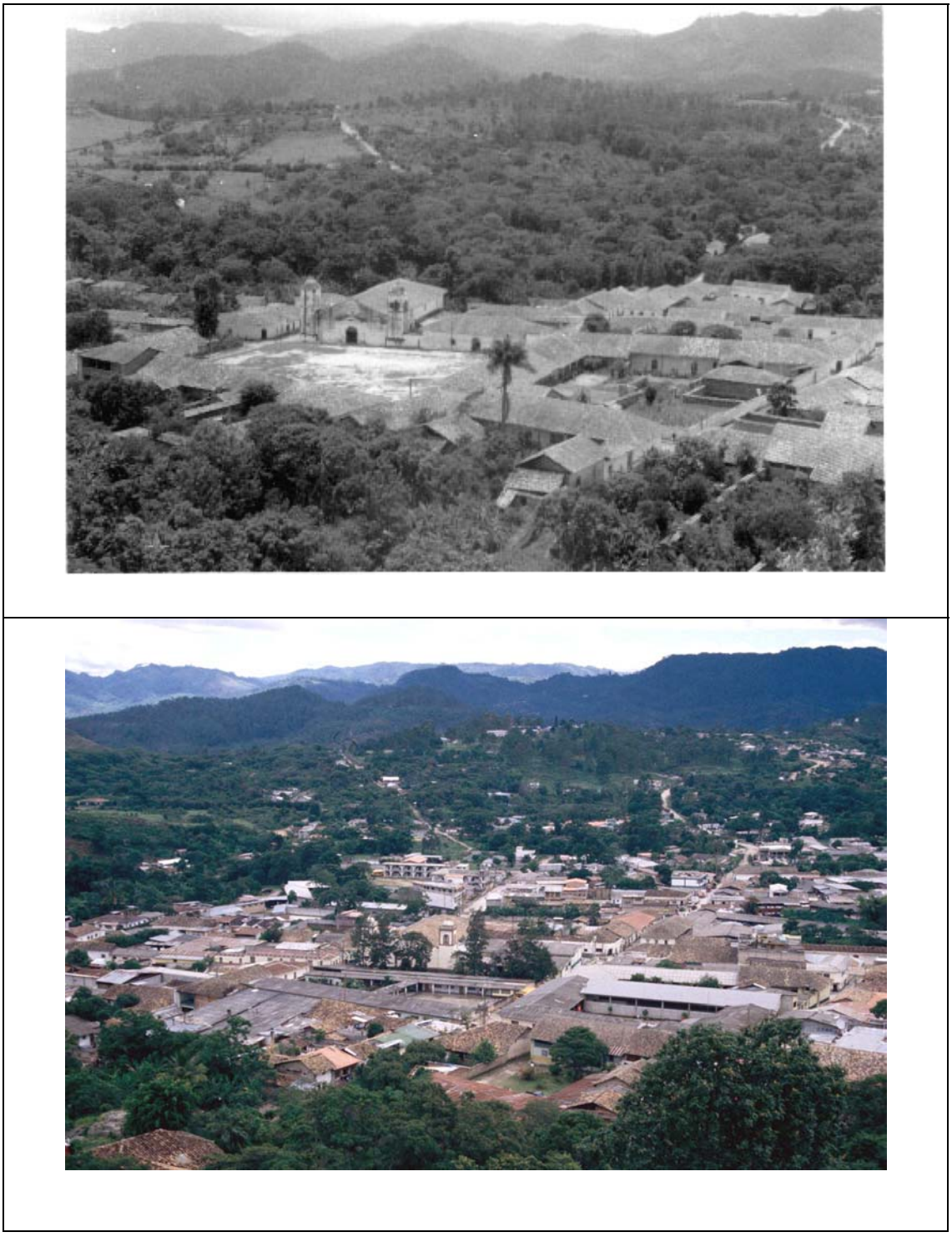


Figure 49. PP44; Marcala, La Paz.

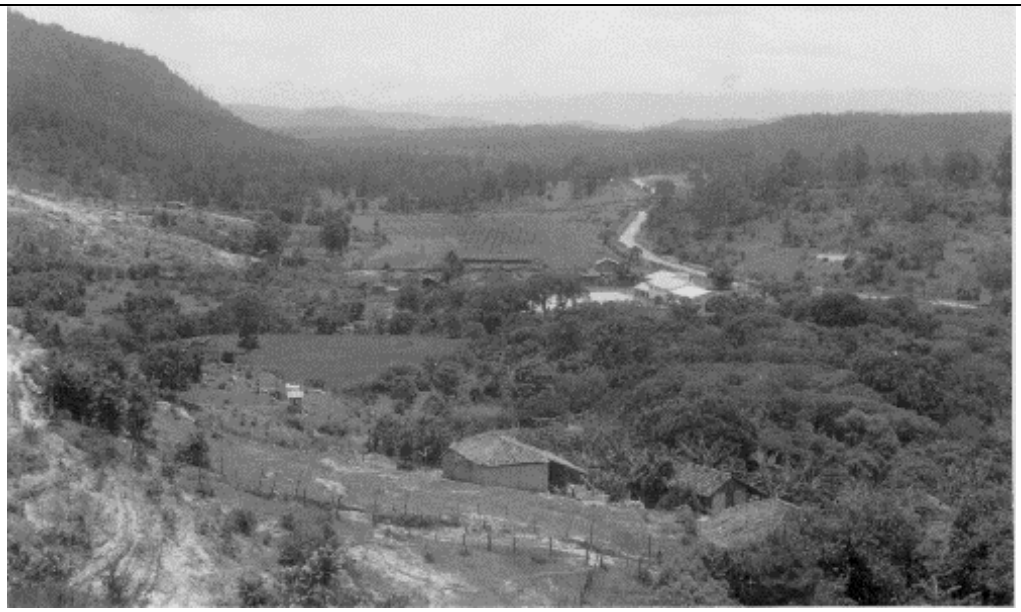


Figure 50. PP45; Marcala, La Paz.

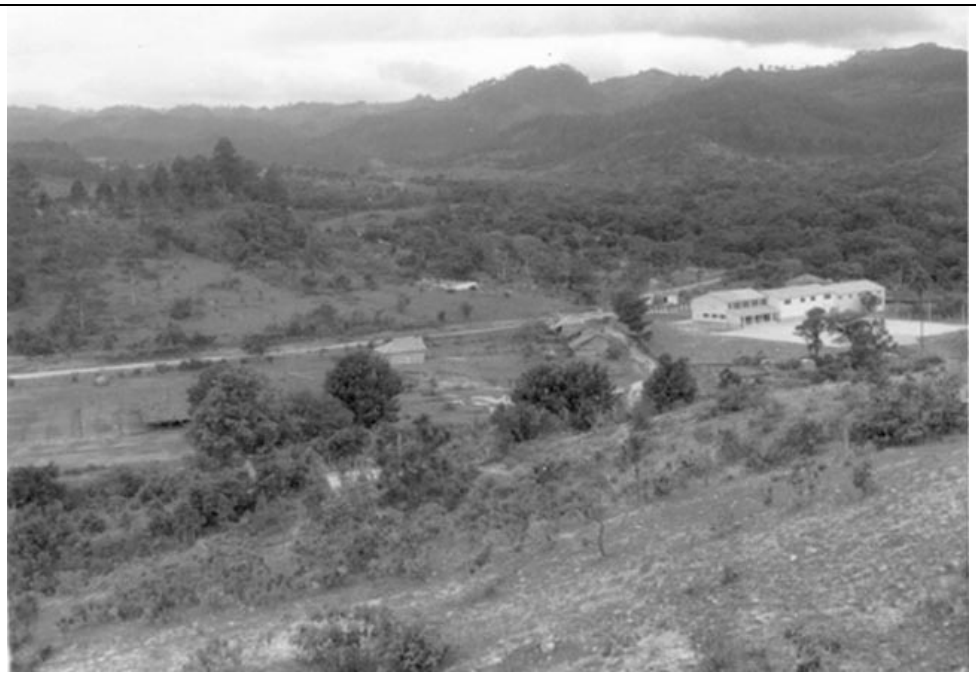


Figure 51. PP46; Marcala, La Paz.

growing importance of coffee production, as well as because of in-migration, after 1998's Hurricane Mitch and after the 1969 Soccer War with nearby El Salvador. PP44 and PP45 were both taken from essentially the same spot up on the hillside overlooking the town from the west. PP44 looks roughly east, while PP45 looks north. PP46 was taken from the next hill to the north looking back toward the town.

For PP44, I had to take the photograph from a bit farther back and up the hill than where West stood in 1957 because of interfering tree growth. Thus, the foreground coverage is wider in the newer photo while the background is essentially the same. In the 1957 photo, the church faces the open plaza and a few blocks of tile roofs mark the town's extent, surrounded by citrus and pine trees. Land clearings appear in the background. In the 2001 photo the town has visibly grown. The church is barely visible behind a row of conifers and the plaza is no longer, a school having been built on its site. A new *parque* has taken its place a few blocks to the southeast, just out of the photo. The trees that were just behind the town in 1957, primarily citrus *fincas*, have largely given way to the town's growth. However, in the background the 1957 clearings are now covered with tree growth. In fact, aerial photograph assessments indicate that tree cover has increased around the town over the past half century.

In the 1957 photo in PP45, two houses sit in the foreground and one can detect a scattered few in the background. Tree cover and settlement are both sparse along the highway leaving town. The few buildings and cement slab visible in the center of the photo are the coffee processing *comarca* where locals brought coffee for

processing. In the 2001 photo, the town as grown out and filled in most of the area. The coffee *comarca/beneficio* remains but is no longer outside of town. Not visible are the dozens of other coffee processing centers that have opened in the past 10 years all over town. Tree cover has increased in the immediate foreground but appears to have decreased a bit in parts of the background.

PP46 was taken from the lower part of the far hillside on the left in PP45. The coffee *comarca* appears on the right center. In the 2001 photo, we see the settlement growth also apparent in PP45. We also see more trees. The *comarca* is not visible because of pine trees that block the view. The valley floor has filled in with settlement and a few more trees. As well, the pines that block the view of the *comarca* are on what was in 1957 a barren hillside. This hillside has become a neighborhood of semi-dispersed settlement. The shrubs that appear in the 1957 photo have become trees.

Locals in Marcala, generally unsolicited, consistently offered up information on local changes. I leaned on a steel gate one afternoon talking to the lady who lived on the other side of it. She grew up in Marcala but spent some of her adolescent years in Chicago where she went to high school. As we were at the north edge of town, I asked her about the town's growth. She said that, yes, Marcala had grown a lot, especially since the 1980s. When she was a kid, she said, it was so different.

"It was much smaller. It was cooler, too."

Though I hadn't brought this up, I pursued her thoughts.

"Yes, it is much hotter now. This time of year ten or twenty years ago, you needed a sweater to be outside like this. Now it's so hot."

She held up her bare arms to show. I asked why she thought it had gotten so "hot".

"Because everyone is cutting the trees," she replied, as if it were obvious. "We thought of putting a coffee finca back there on the hill. Everyone says 'First thing is you cut all of the trees. Then you plant coffee'. Hmmph. So we didn't do anything. We left the trees there. No coffee."

She said that the situation is becoming dire and that they need trees. She pointed at the sky.

"When I was a kid here, at this time of year you could go days without seeing the sun. It was all clouds, days at a time. Now? No. Look."

She pointed to a nursery down the hill behind her house. The nursery sat on her property but was a project of a Catholic NGO. She supports the project by letting them use the land. In exchange, she asks for some of the trees, mostly pines, casuarina, mahogany, and acacia, among a few others. She believes strongly in the project, which focuses on planting trees near water sources.

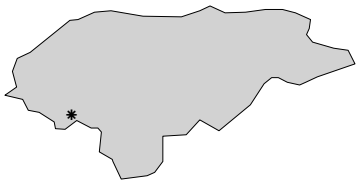
"The local people don't understand. They think we are crazy. They say, 'Why would you not have a finca because you want some trees?' It's hard to make them understand. But at least there are people like the organization who understand, who are trying. The majority of people here, they are living for today. Well, at least we have the fortune to live differently, and to think about it. We don't have to cut the

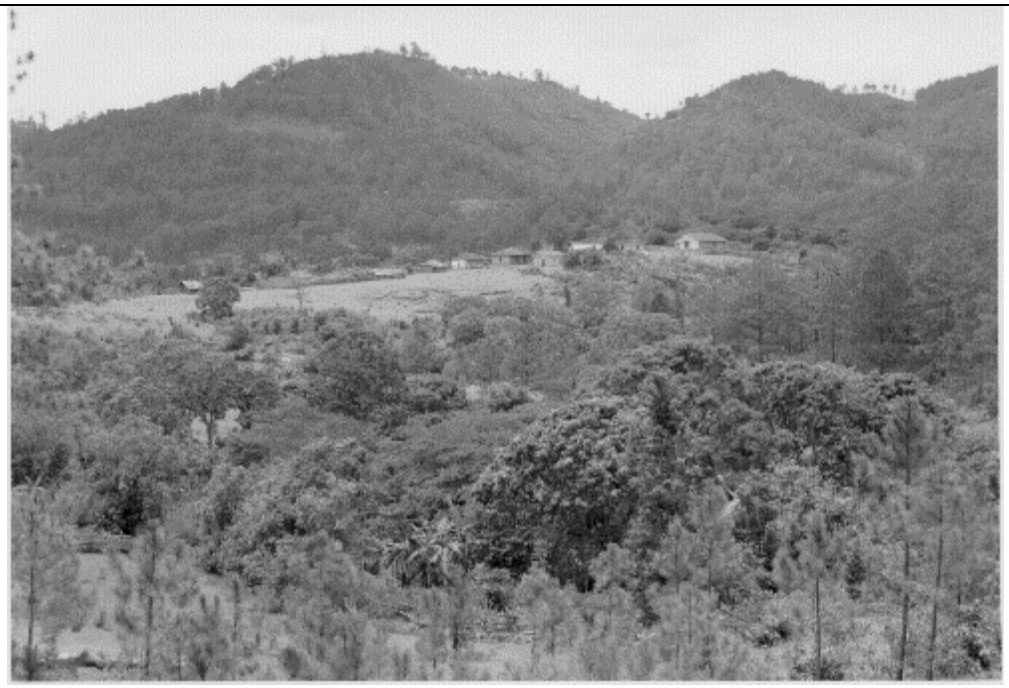
trees for firewood and stuff. We have other options. But they have to warm their food somehow. And grow their food somewhere. It is not an easy situation."

Thus, locals in Marcala, as in other places, say that it used to be cooler, that it rained more. But now, they say, because of all of the deforestation, it is hotter and rains less. Indeed between the early 1950s and the early 1990s, Marcala saw a 315 mm drop in precipitation. Though, I was not able to obtain temperature data for Marcala, data for the country also indicate a slight warming trend for the same period, but a warming of perhaps 0.5° C. However, as the photos (oblique and aerial) indicate, there has not been an obvious corresponding drastic decrease in area tree cover.

PP47

Five kilometers from Marcala just off the highway to La Paz sits a small town, Chinacla. An old indigenous settlement, Chinacla is part of the Marcala coffee culture region. This is particularly evident from the photo pair. The 1957 photo shows an open town surrounded by hill slopes partially forested, mostly by pines, oaks, and *liquidambar* (known in the U.S. as sweet gums but called by their scientific genus, or corruptions thereof, in Honduras). The 2001 photo shows changes, mostly vegetative and mostly tied to the increase in coffee production. The new patio in the foreground is for drying coffee.





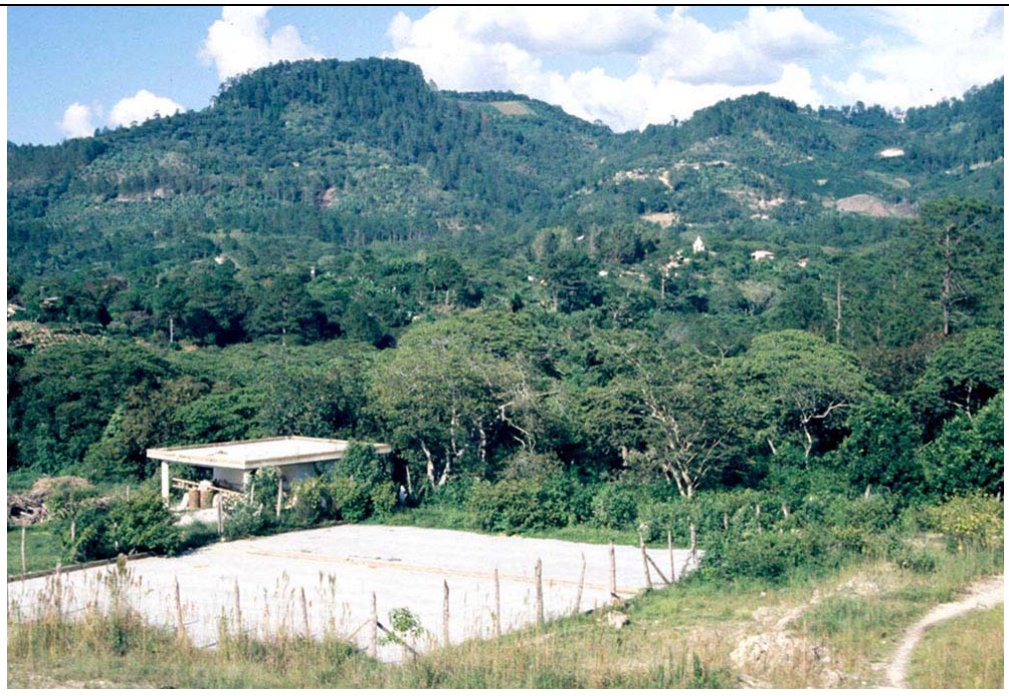


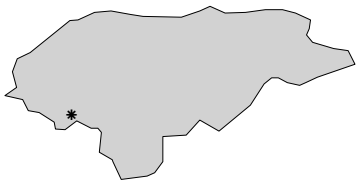
Figure 52. PP47; Chinacla, La Paz.

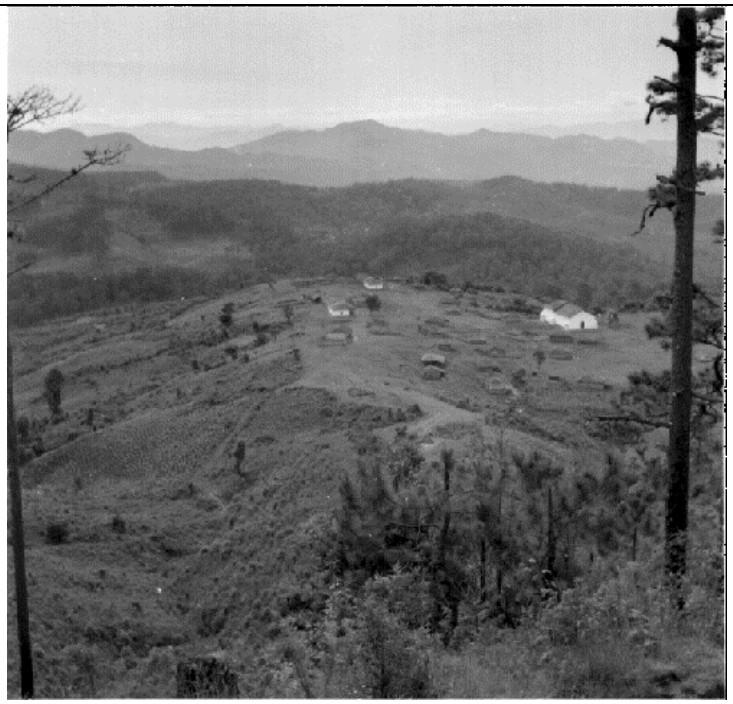
Many houses in the Marcala vicinity have these. The town itself in the new photo is no longer really visible except for the church belfry, built in the 1980s. Rather, we see the settlement forest, composed of a variety of trees: oaks, pines, sweet gums, juniper, eucalyptus, and a variety of fruit and shade trees, many of the latter being species of *guama* (*Inga spp*.) commonly used for coffee shade. Their light-colored trunks are visible just beyond the patio in the foreground.

Beyond the town, we see dynamic hill slopes, much changed over the past half century. This is one of the few areas that I saw that shows a decrease in trees. Much of the forest has been chopped up for the development of new coffee *fincas*. This has occurred recently, for the most part. Though a decrease in vegetation on the slopes is apparent in the photo, in a few short years the coffee shade trees that have been planted in the *fincas* will have grown up and the scene may appear very different.

PP48

Southeast of Marcala, back up into the Lenca highlands in La Paz, sits Santa Ana Cacauterique. Like most Lenca villages that I visited in La Paz, Santa Ana sits up on a cool, breezy hilltop, the church's Black Christ (Richardson 1995) watching over its indigenous residents. Again the pattern: Santa





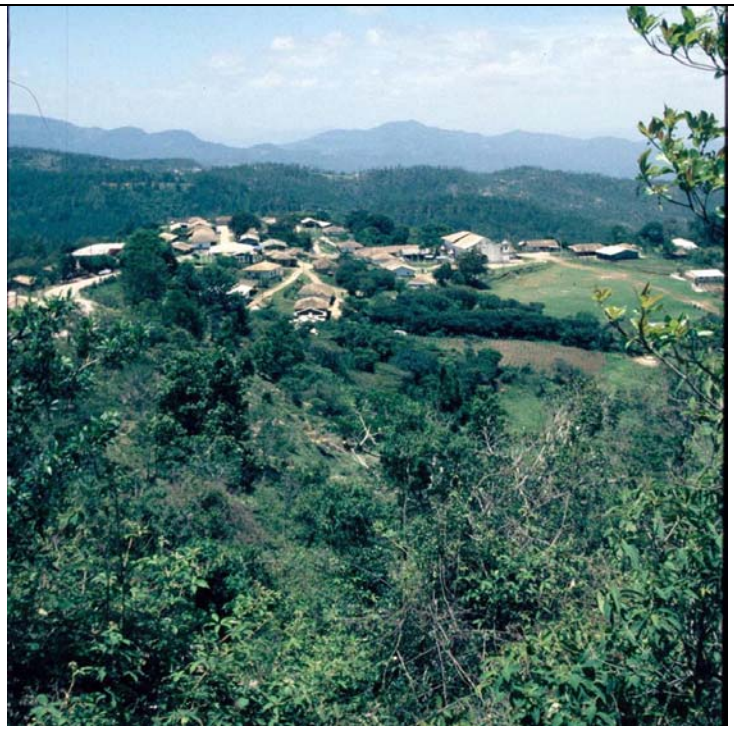


Figure 53. PP48; Santa Ana, La Paz.

Ana has more trees.

Though the original perspective is not exactly replicated due to too many interfering trees, the view is essentially the same. The town has grown. Like most rural Lenca villages, this is recent. Peace Corps volunteers clued me in to the notion that when the villages, some of which have existed for hundreds of years, receive a water supply system, electricity, or both, their populations blossom as nearby rural dwellers move in. Most of the towns such as Santa Ana show little change in population and in rural-to-urban ratios between the 1961 census and the 1988 census. However, since 1988, many of them have grown significantly. It is probably not coincidental that this is also the time period during which the developed world has turned much of its attention to development and modernization in places like Santa Ana. Most of these places have recently joined the electric, communication, and transportation infrastructures in the past decade or so. Others are waiting to do so.

Santa Ana residents are planting trees in their town: pines, juniper and eucalyptus mostly. They are also, like so many other places, beginning to grow coffee at a commercial level. Thus, the municipal landscape shows the now familiar settlement forest. As well, like so many other places in the area, the surrounding rural landscape shows more trees where former corn and bean fields have been or are being converted to coffee *fincas*, often with shade trees. Again, also, the town has grown, electricity, communication and transportation infrastructures have arrived, and the church has obtained a new belfry.

These various aspects can at times combine to create a sense of place that leaves the visitor chuckling and a bit confused. As I photographed the village church's Black Christ crucifix – a post-colonization syncretism of Catholicism and pre-Hispanic worship (Richardson 1995, Wolf 1959) – kids in Tommy Hilfger attire held bottles of Coca-Cola and watched me as their stereo blasted "Who Let The Dogs Out?" through the big, open wooden doors. Whether the increase in trees and the arrival of "global pop culture" bits are inseparable is something about which I wonder.

PP49

In this photo pair of Guajiquiro, La Paz (see PP19), we see the same set of changes as in most others: a transportation infrastructure has turned the grass streets to gravel and mud, electric lines crisscross the village bringing lights, cold storage and television to most every house, and commercialization announces its presence through advertising. The hill in the background shows two interesting changes.

The first change, interesting mostly because of its relevance to the methodology, is that the alignment of the street to the hill has changed. It took me two days to figure this out. Thinking that the foreground building in the 1957 photo was the old cabildo, the same as the second building on the right in the 2001 photo, I

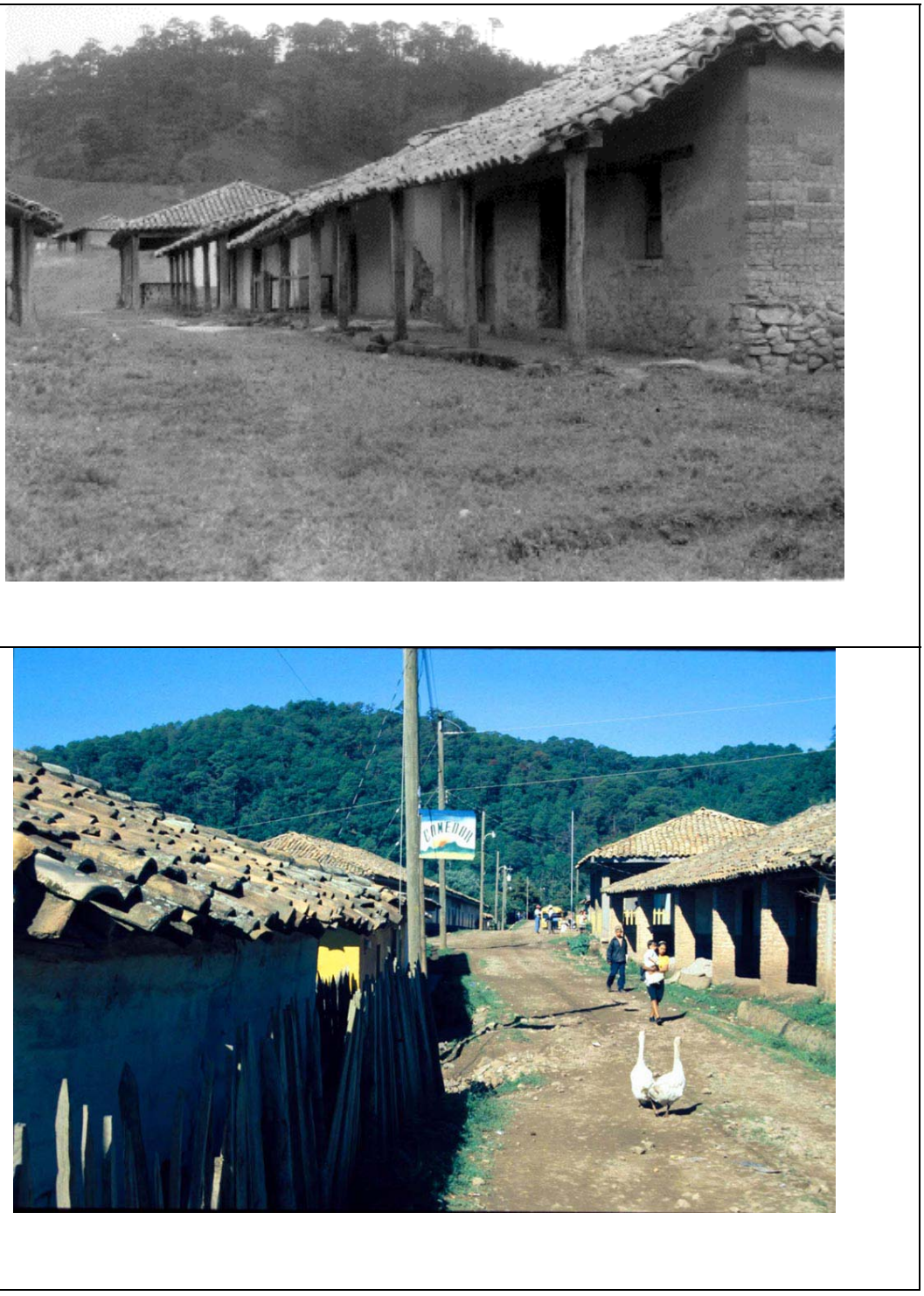


Figure 54. PP49; Guajiquiro, La Paz.

kept trying to find the correct angle from which to retake the photograph. Everyone in the town told me that it was so as well. Eventually I realized that we were all mistaken. The oldest building in town, I discovered, is only about 40 years old, younger than the original photo. It is not visible in the photo. I finally realized that the entire town has been essentially rebuilt and realigned since West's visit. Though we tend to think of small remote villages such as this as unchanging and, especially when we see dusty adobe buildings, think of them as somewhat timeless, this is not necessarily so. Through this project, I came to appreciate the dynamic nature of adobe landscapes, and of the Honduran landscape in general. They are changed seemingly frequently and readily; in this case, the whole town was reorganized.

The second change is what appears to be more and thicker pine forest on the slope. This pine forest is very old but is also most likely a cultural landscape created through centuries of burning (Johannessen 1963, Denevan 1961). The more 'natural' landscape in the area's highlands is broadleafed cloud forest, though very little remains.

PP50

This is a photo of the *caserio* or hamlet of El Carrizal, located a few kilometers northwest of Siguatepeque in Comayagua. Far away from the Lenca

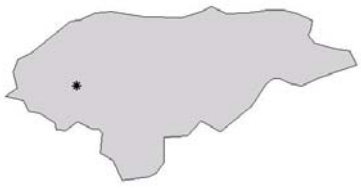


Figure 55. PP50; El Carrizal, Comayagua.

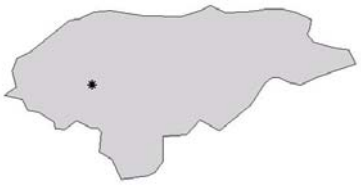
highlands, El Carrizal sits in a giant descending curve in the main highway between Tegucigalpa and San Pedro Sula. Along the highway above the town, large kilns cook calcium-rich rocks to make lime for cement, fertilizer, whitewash, and tortilla preparation. Down in the half bowl, the settlement is mostly dispersed, though a hearth with a school and church does exist more or less in the center. I cannot say for certain that the new photo was taken from the same site as the original photo. Simply, no way existed for me to know. Thus, the backgrounds are about the same, but the foreground portion of the photos cannot be safely compared. I do feel like I was close, though.

In the 1957 photo, the settlement is dispersed and open, "most households surrounded by plots of plantains, fruit trees, and maize enclosed by rail fences of pine logs (for protection of crops from livestock, which roam the patures freely)" (West 1995). The settlement is no longer open range. Most of the land is fenced with barbed wire and crisscrossed with dirt roads or footpaths between fences. The crop complexes still exist but the pattern has changed, no longer appearing as islands in an open landscape. More reliable, the backgrounds of the photos show that the hillside indeed has more trees today and that agriculture there appears to have decreased in intensity.

PP51

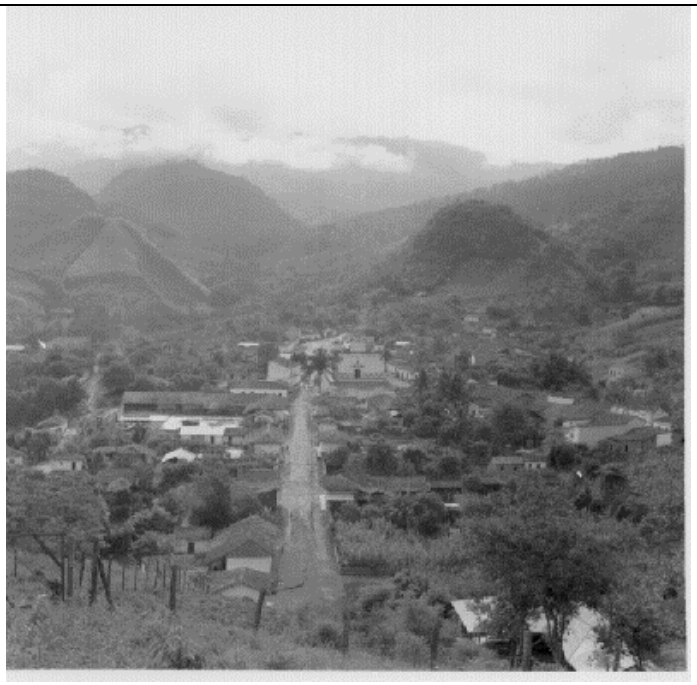
La Libertad, Comayagua, north of Comayagua City and near the new El Cajon Reservoir, was one of four early important coffee production centers in Honduras.

The photos do not allow much assessment of change on the hill slopes just beyond the town due to scale and resolution, but they do show a significant increase in vegetation in the foreground. The hillside from which the original photo was taken is now densely settled. Most of this is new. This is most likely the reason for the vegetation in the new photo as settlement has probably replaced agriculture. The only significant vegetation change visible in the town itself is in the plaza in front of the church, where the plaza has been landscaped and filled with trees and shrubs, by now an expected change.



PP52

The photographs are vistas looking over the city of Comayagua (see also PP20-PP23). The view looks west toward the Sierra de Montecillos. West incorrectly noted that it looked toward the Montaña de Comayagua, which lies to the east.



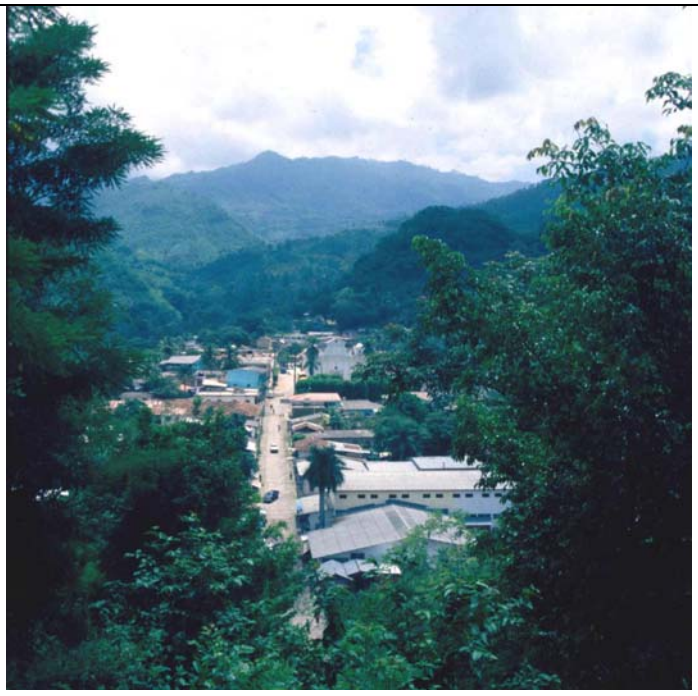


Figure 56. PP51; La Libertad, Comayagua.

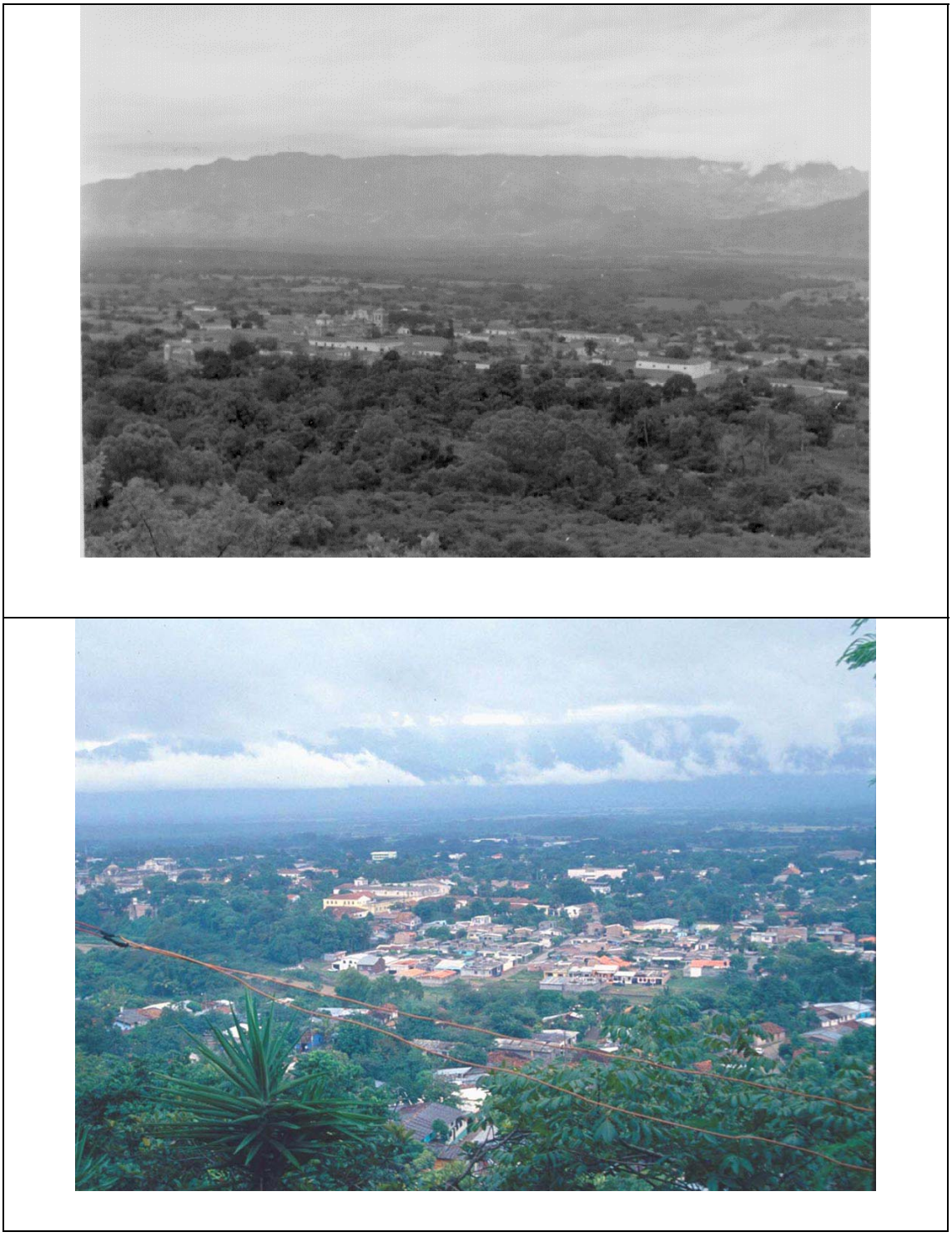


Figure 57. PP52; Comayagua, Comayagua.

The two photos are not a perfect match for several reasons. One reason is that the hillside from which both were taken is now thickly settled, scattered with small, crooked houses and criss-crossed with steep pathways. Thus, finding the original photo site was difficult. Also, the thicker clouds in the background of the 2001 photo were the front line of Tropical Storm Michelle, which was moving into the valley as I climbed around the hillside. The increasing rain, which had already begun flooding many north coast towns, ran me and my camera off of the slick hillside and back into town. I never had ample opportunity to return during the trip.

Though they don't match up perfectly and, though the background portion of the Comayagua Valley is barely discernable for comparison, the photos do however show both the growth of the town and the growth of the settlement forest, at least in the older parts of town. Beyond and to the left (south) of the main church, trees are more and bigger, though the area of new urban growth has seen a decrease. Unfortunately, the valley in the background is not clear enough to offer much to compare.

PP53 and PP54

Southern Honduras is famous (or infamous) for its heat. It is also seasonally very dry. The area has long used this intense dry season to support a local salt-making industry, extracting salt

Figure 58. PP53; San Lorenzo, Valle.

Figure 59. PP54; San Lorenzo, Valle.

from seawater from the Gulf of Fonseca. Recently, partially at least due to efforts of Taiwanese development interests, the area has also become home to a large shrimp farming industry, complete with environmental concerns for protecting the mangroves that shrimp farms often replace. On a volcanic island, Isla del Tigre, the port town of Amapala was once one of Honduras major ports. Developed and controlled mostly by German interests, the port has since been replaced by mainland San Lorenzo and now mostly just languishes. The island is visible in the background of photo PP53. As the two photos PP53 and PP54 form a sort of panorama, the scene in PP54 is a continuation to the south of PP53, both looking across the coastal plain and to the gulf.

Neither of the two 2001 photos were taken from the same spot where West stood for his. The hill upon which he stood, adjacent to the PanAmerican Highway (the roadbed is visible in his two photos), is now fenced off by the petroleum company that owns it and I was not allowed access, legally or otherwise. Thus, my photos were taken from a much lower vantagepoint across the highway. Consequently, the utility of comparing the photo sets is limited. The backgrounds perhaps offer the best comparison, but little change appears. As well, due to the flat terrain, little area is actually visible to compare. The area remains in seasonally dry sclerophyllous vegetation, becoming mangrove marsh toward the gulf. Cattle still roam the area, eating fallen *jicaros* (*Crescentia spp*.) during the dry season due to a shortage of other forage.

If nothing else, the photo sets offer an example of some of the challenges and limitations of using repeat photography as a methodology.

PP55

Northeast of the southern town of Choluteca in the department of the same name, El Corpus sits just above the broadening drainage basin of the Rio Choluteca. It was an important place for gold mining from the late colonial period until the late 19th century. It retains the colonial mining town landscape of whitewash, tile roofs, and cobblestones. It also, like so many other remote former mining centers, now sits poor and quiet.

In the photo pair, the hill slopes beyond the town have not changed significantly in regards to vegetation. A few scant patches of cleared land show up in both photos. In the midground and the foreground, though, an increase appears. Fruit trees and shade trees fill the town and its residential edges. Few houses sit out in the open sun like the one in the foreground of the 1957 photo. This is one of the most consistent changes that I found throughout the country.

Figure 60. PP55; El Corpus, Choluteca.

PP56

Though practically no *cedros* trees (*Cedrela spp*.), after which the town was named, remain in the area, Cedros, Fransisco Morazan (see PP25 and PP26) does support more trees than it did in the 1950s. The photos were taken from the same hill as PP26, a public space now filled with trees and wooden signs announcing the virtues of forests. Within the town, we see little change. However, on the slopes beyond, trees are more and bigger. The settled area in the upper right indeed supports more vegetation and the clump in the upper left-center has grown. This increase makes the assertions of the proprietor of a local store (see PP25 and PP26) seem curious and perhaps even a bit suspect.

PP57

Twenty-five kilometers west of Tegucigalpa, the town of Lepaterique supports a timber and pine resin industry (see PP24). The national forestry service, COHDEFOR, has its conference and training center there as well. The photos make it obvious that the town has grown significantly during recent decades. As settlement has spread and intensified, so has the tree population. Most are local pines, fruit trees, eucalyptus, or juniper. In the

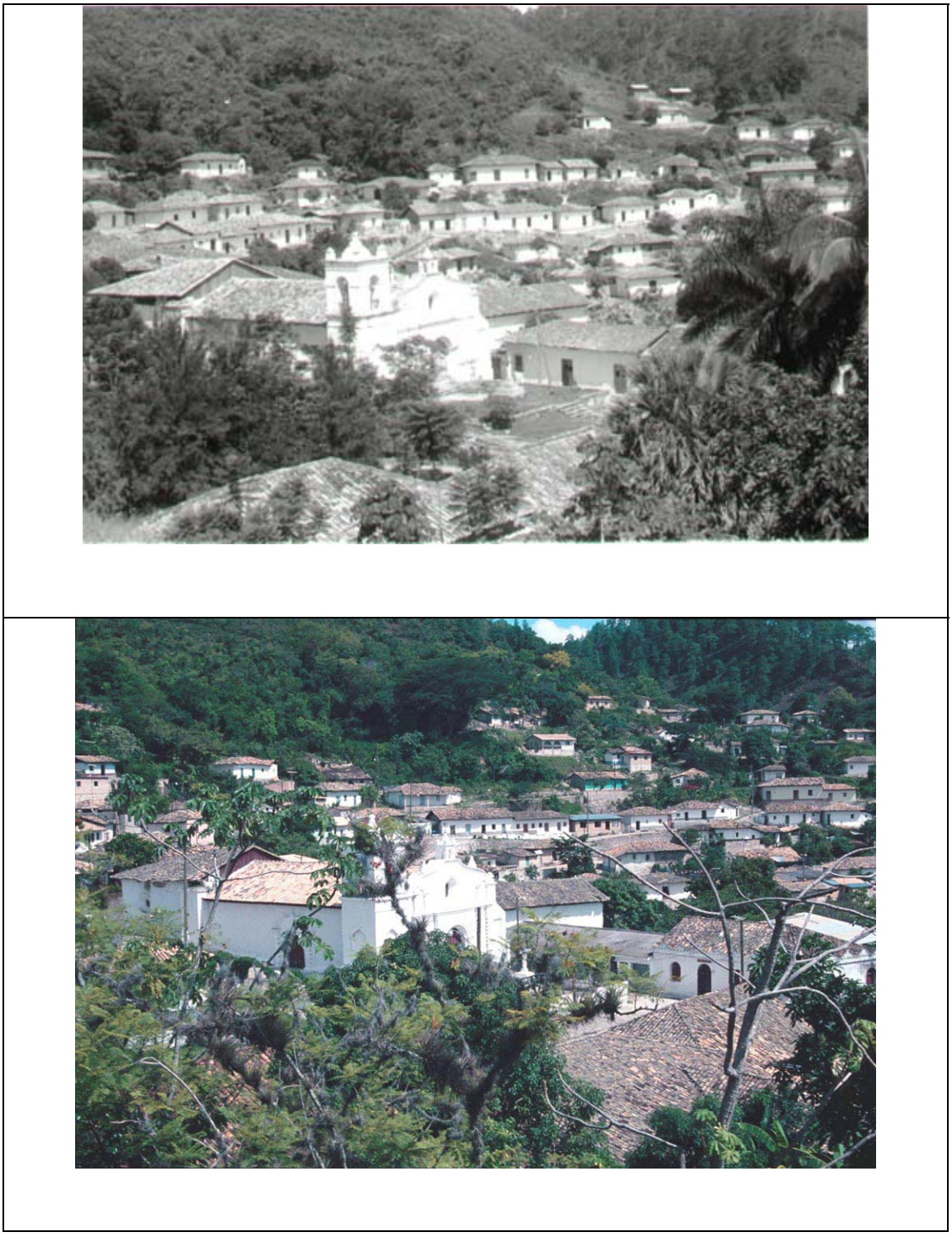


Figure 61. PP56; Cedros, Francisco Morazan.

Figure 62. PP57; Lepaterique, Francisco Morazan.

foreground, volunteer pines are being allowed to grow up, both near the road where West and I both stood and in the pasture below. The gallery forest along the quebrada beyond the pasture remains much as it was, if not taller. In the new settlement area, new trees shade houses and sometimes provide food. The plaza in front of the church has been filled with a school, rather than the park landscaping that is so common. The open area beyond the town in 1957 (upper left) has since filled with both houses and trees. The small section of trees (upper left) that extended down into this area when West visited remains. It is the town's cemetery and, thus, supports the requisite evergreen species (see Jordan 1982). The largest industry around Lepaterique is forestry-related and so people and the landscape both readily (sometimes dogmatically, it seems) spoke of the virtues of trees. Much of the forest around the town, as in much of the country, is well managed by COHDEFOR and so in places appears to be as much a crop as a forest.

As I was taking this photo, a man came pushing a long, wooden wheelbarrow up the steep embankment toward the road. He stopped to see what I was up to. I showed him the photo and told him that I was looking out to see what had changed in his town. I said that it seemed to have changed a bit.

"Yes. Lots of change."

"The place has grown."

"Oh yes. Much bigger."

I said that, judging from the photo, I thought there might be more trees than in the 1950s.

"Yes. We have lots of projects here now. Lots of organizations, lots of forest projects, like COHDEFOR. Lots of other projects too. Especially since Mitch. There have been lots of organizations and lots of donations. It's better now here. The town and life are better, *gracias al Señor*. Things have improved a lot. We have offices now. And trees."

The conversation shifted a bit. It was late September 2001.

"Did you know the twin towers?"

"Yes," I told him, "I visited there when I was a kid."

We agreed that the attacks were a shame, *que bárbaro*. Then he held forth on the future in a way that told me maybe not so much about the future but that did tell me something about another change happening in Latin America.

"There are big problems in the world. What happened with the towers was a prophecy. It was in the Bible, *La Palabra*. There are more things to come, too. It is in *La Palabra*. I know. I know these things. It is because I am a Christian, an Evangelical. I know. The word says so."

As Latin American souls are increasingly colonized by non-Catholics to the north, their owners are also becoming more literate. This seems to be occurring simultaneously. The icon – Jesus on the cross, the Virgin of Guadelupe – is perhaps the glue of Latin American Catholicism. As they become evangelized and literate, will Latin Americans also become more literal? Will the Bible replace the image? My conversation with this man, one of so many just like it, hints that this may indeed be happening. Men preach on buses now about Jesus, yelling up from the pages of

their black Bibles. Women read their own as the buses barrel along narrow highways and crawl along dirt roads. T-shirts announce the virtues of Jesus, in words not pictures. The virgin never appears in words.

Though this is not necessarily directly related to the other landscape changes upon which I am focusing, it is happening and it does seem significant. As some of the bases for the changes in both trees and perceptions of trees are made clearer in later chapters, this religious change may be part of the same path of information diffusion that is at least partially responsible for the changes in vegetation that I found. Thus, it deserves some mention in these pages.

PP58

Southeast of Lepaterique, down into the steep, rugged terrain that drops toward the Gulf of Fonseca, the Spanish once extracted gold and silver from a hill called Guasucaran. The hill now sits quietly, its mines' empty holes staring out into pine forest around them (see PP29). Nearby, a few dispersed people scrape by growing corn and beans, tapping pine resin, and, for a lucky few, selling soft drinks and salty snack chips from El Salvador.

The photos, taken from the roadside on the way to the hill and caserio of Guasucaran, show little change. The pines in the foreground have grown up taller, partially blocking the view of the slopes of

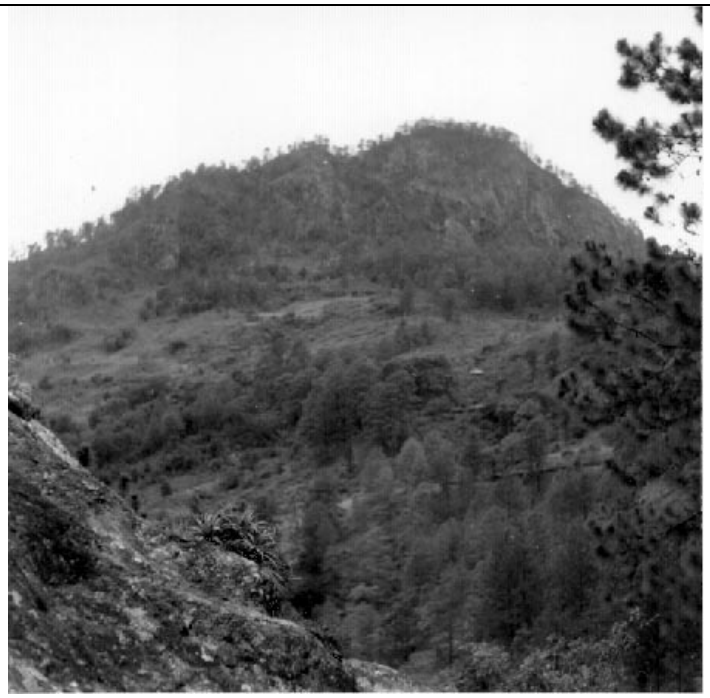


Figure 63. PP58; Guasucuran, Francisco Morazan.

Guasucaran. The clearings on the hill's lower slopes do remain, though they have also partially filled in with tree growth. The appearance of thicker forest higher up is likely due in part to the different angles of the sun. West took his photo in June and I took mine in November. The appearance of thicker forest is also probably due, in part, to thicker forest. As has been seen previously, former mining areas are in a process of recovery since the cessation of mining activities about a century ago.

PP59 to PP62

Cerro de Hule is a big, bald hill south of Tegucigalpa. It sits just to the west of where the Southern Highway begins its steep descent to the south. It is completely covered in pre-Hispanic terraces. Residents continue to utilize the terraces to raise primarily corn, with some cattle on the lower slopes. In the photos, some grasses in the foregrounds are taller because the recent photos were taken later in the year than West took his.

In PP59 we see the exact same field patterns and many of the same trees. New trees also appear in various spots throughout the scene. I estimated that about 20% of the terraces were in cultivation when I visited. One farmer who saw the original photo noted the increase in trees, claiming that it has occurred because people in the area have become aware of the problems of deforestation and have consequently been actively planting trees. On the hilltop in the center of the 2001

Figure 64. PP59; Cerro de Hule, Francisco Morazan.

Figure 65. PP60; Cerro de Hule, Francisco Morazan.

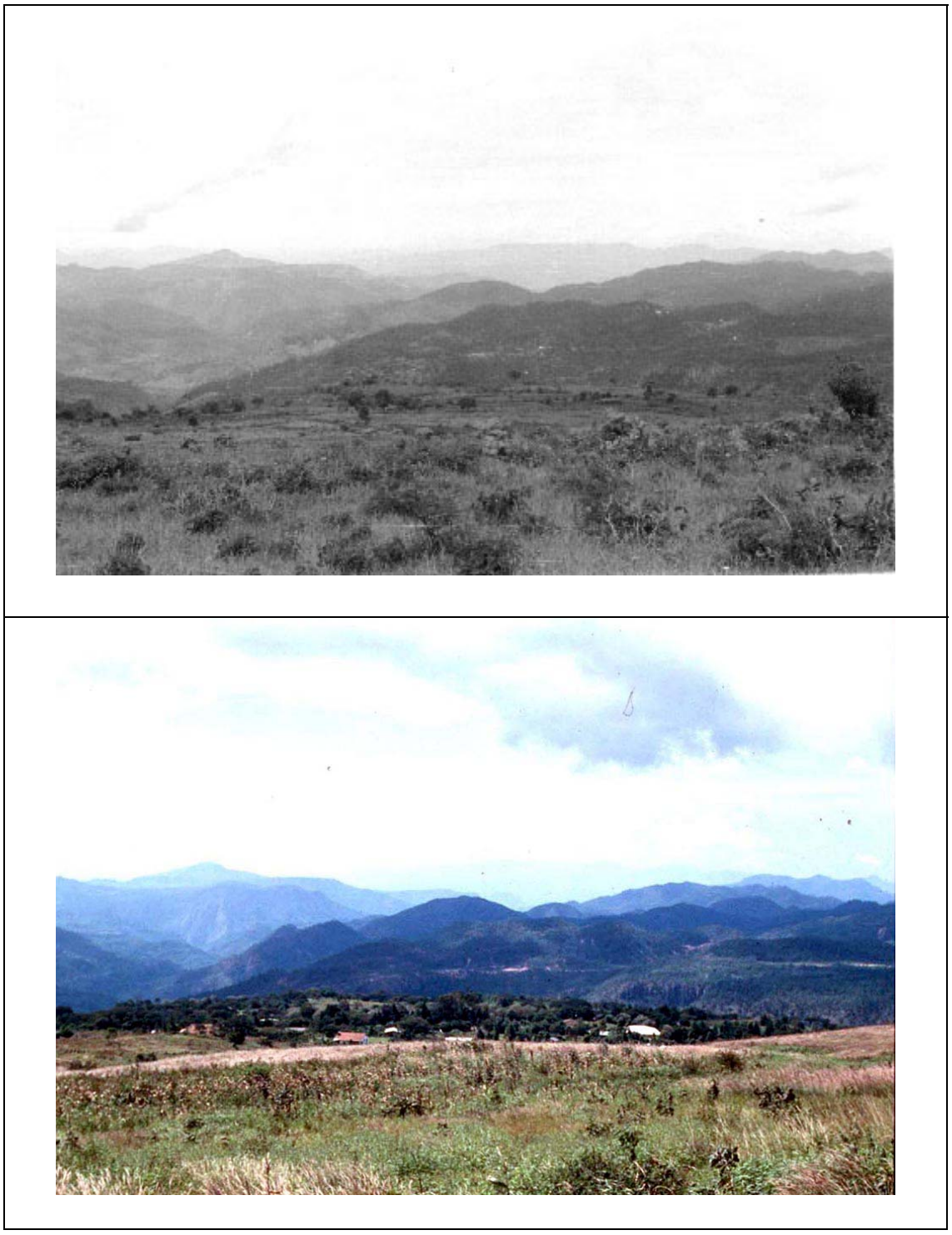


Figure 66. PP61; Cerro de Hule, Francisco Morazan.

Figure 67. PP62; Cerro de Hule, Francisco Morazan.

photo, tall telecommunications towers mark the expansion of modern communication technology since 1957.

In PP60 new tree patches and individuals appear along the ridges but further assessments are difficult because of the difference in perspective. The photos in PP60 share the same background. However, the 2001 photo was taken from a vantage point much closer than the 1957 one due to a thick growth of oak trees that made the original impossible to reproduce. The vantage point of the 2001 photo is just in front of the tree stand that appears in the right foreground of the 1957 photo.

PP61 shows the now familiar settlement forest, located midway between the foreground and the mountain slopes beyond. This is where the paved road passes on its way from the Southern Highway toward Ojojona a few kilometers to the west. The area along the road has been more intensively settled since West's visit and, consequently, shows an increase in tree population as well as in the settled landscape. PP62, though the exact foregrounds cannot be asserted to be the same, also shows more trees along the highway corridor as well as an increase farther up on the hill as the forest has descended it somewhat.

PP63

Earlier in this chapter, PP32 showed a street scene in the old mining town-turned-bedroom community of Santa Lucia northeast of

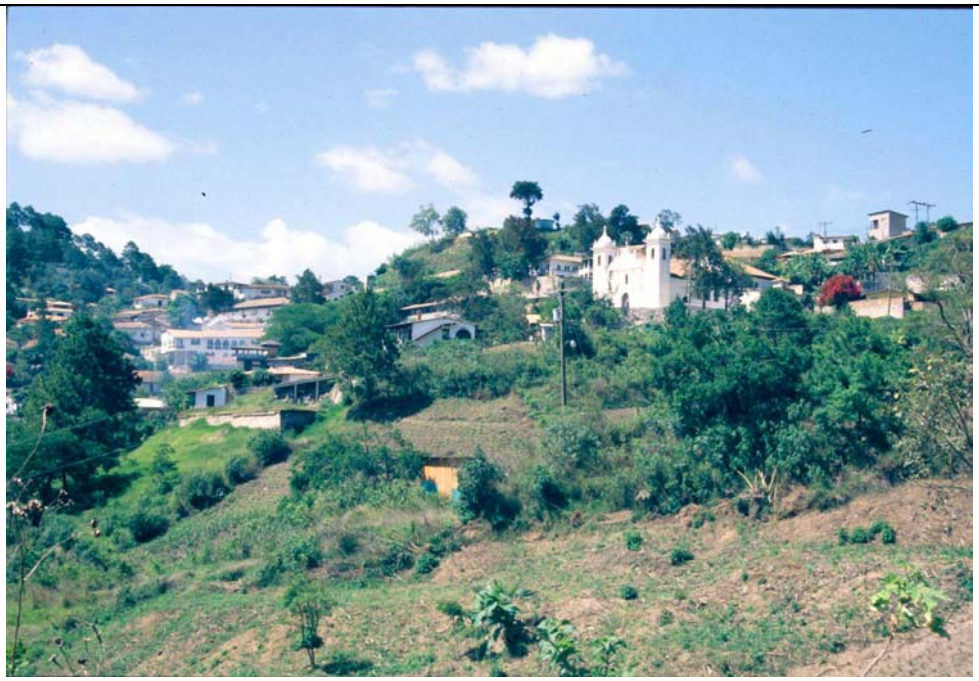


Figure 68. PP63; Santa Lucia, Francisco Morazan.

Tegucigalpa. PP63 is a view of Santa Lucia from just below the town. The church is unchanged but the town has visibly grown. Power lines and water tanks mark the modernization that has taken place. As well, the vegetation has increased. Though the increase in this case is sporadic and dispersed, it is significant in terms of biomass. The slopes in front of the town are still used for agriculture but perhaps not as intensively as before.

PP64

The former mine of El Rosario was the most important post-colonial mining center in Honduras. American interests purchased it in the late 19th century and thought enough of their interest that they successfully lobbied the Honduran government to move their capital from Comayagua to nearby Tegucigalpa. San Juancito, in the crevasse at the bottom of the hill that contained El Rosario's riches, was the mining town and its wooden gabled buildings attest to a previous Anglo presence. The mines have long been closed. In recent years the forest above the town has become a national park, *El Parque Nacional La Tigra*, home to a lush cloud forest, just visible at the top of the photos.

The town itself now supports a thicker settlement forest of local pine and oak, junipers, eucalyptus and fruit trees. The hill slopes around it are still used for agriculture, increasingly coffee, but also support significantly more trees. This

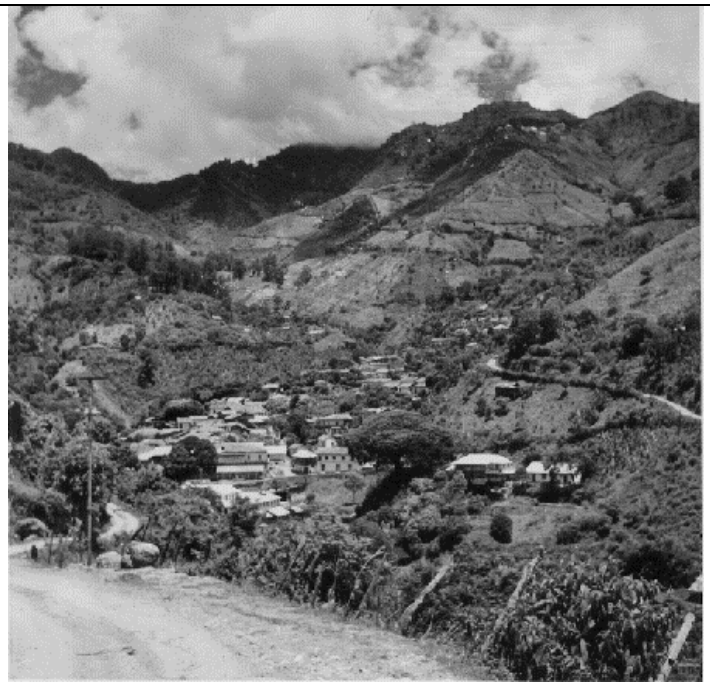


Figure 69. PP64; San Juancito, Francisco Morazan.

pattern is by now familiar, as we see former mining centers recover from the earlier activities in and around them.

PP65

This is the only place that I rephotographed that seems to show a decrease in tree cover. It is of the former mining town of San Antonio de Oriente, east of Tegucigalpa and just to the north of the Zamorano Valley (see PP34). The mines are closed and locals mostly farm the hillsides or travel to nearby Zamorano or Tegucigalpa to make livings. Though a decrease in vegetation seems apparent, the pine forest on the slopes beyond the town remains mostly intact.

PP66

The small, poor town of Texiguat sits in southern El Paraiso along the river of the same name and bakes (PP36). Locals mostly raise livestock and grow sorghum, indicative of the hot, seasonally dry climate. The photo shows the town along the river and the hillsides beyond. Again, the town supports

Figure 70. PP65; San Antonio del Oriente, Francisco Morazan.

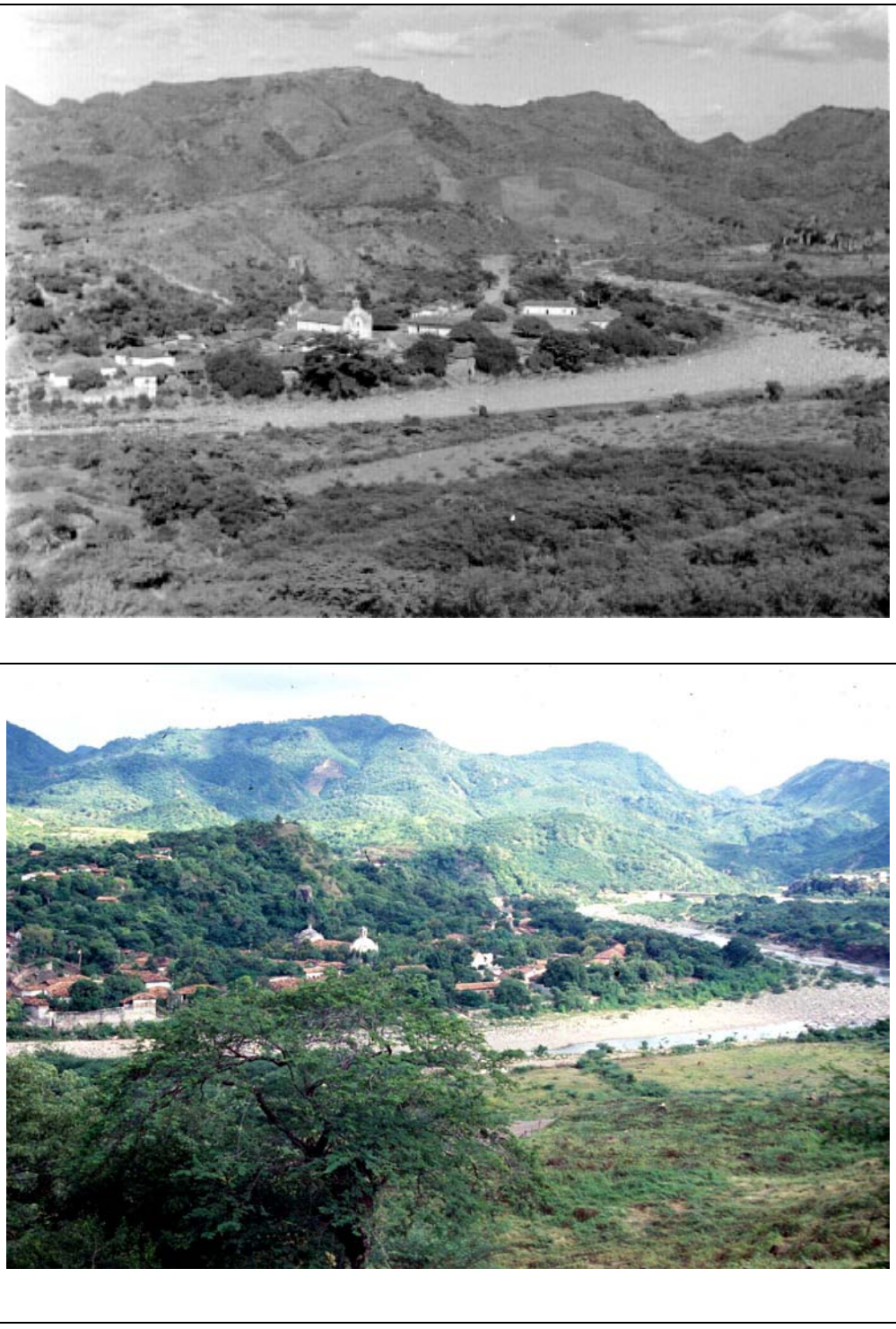


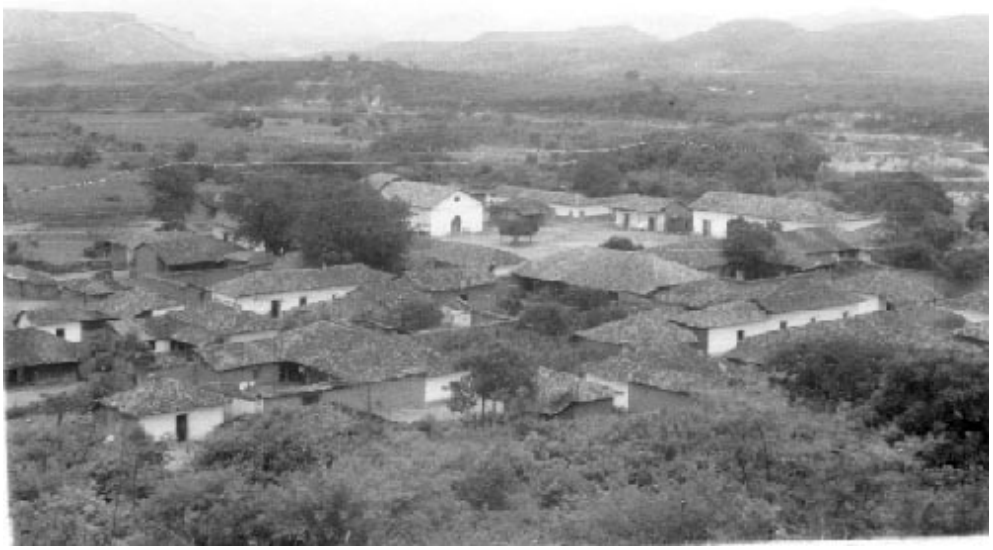
Figure 71. PP66; Texiguat, El Paraiso.

a new settlement forest and the slopes beyond hold much more of the short *monte bajo* vegetation than they did in 1957. The vegetation increase on the slopes appears to be more than 100% and in the town is more than that.

PP67

Directly south of Yuscaran in El Paraiso, Oropoli sits on the Rio San Jose in the upper *tierra caliente*. The town was once an area mining center, hence the name. It is surrounded by the *monte bajo* vegetation characteristic of the hot, seasonally dry region: small, low sclerophyllous shrubs and trees, such as *espino negro* (*Pisonia aculeata*) and *escanal* (*Acacia farnesiana*), among others. Corn and sorghum (locally called *maicillo*) *milpas* appear as occasional clearings in the brush. Cattle and stone walls run all through it.

The photograph was not possible to replicate exactly. The spot where West stood is now the fenced front yard of a house, patrolled when I was there by two uninviting dogs. The new photo shows electric poles and lines and a larger settled area. On the hills beyond, little vegetation change shows up. More trees appear in the settled area. The church and plaza are not visible in the newer photo. This is because, like so many others, the plaza has been reworked and filled with trees and a gazebo. The trees are mostly eucalyptus. Many of the other trees in the settlement



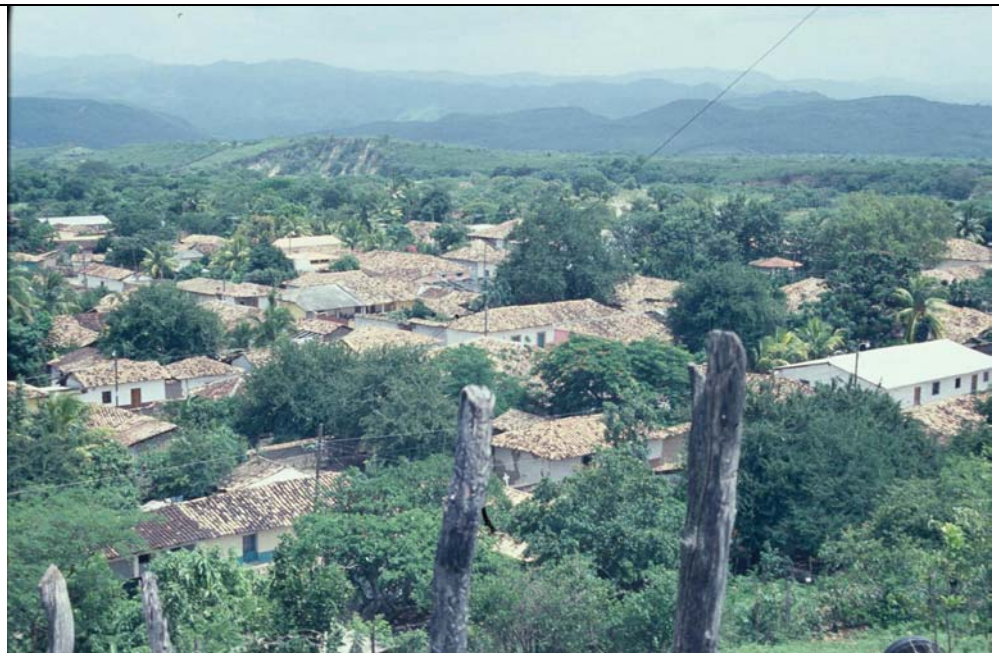


Figure 72. PP67; Oropoli, El Paraiso.

forest are tamarind (*Tamarindus sp*.), which produce the tasty fruit as well as shade and can thrive in the semi-arid area.

Walking through the town, I saw a man standing against the front wall of his cement block house. He was repairing a mahogany slingshot that he uses to kill rabbits and raccoons out at his milpa. He said that of course, as God's creatures, they have to eat too but that he just can't let them have it all. I asked him about the town and what I perceived as an increase in trees. His face lit up and he pointed to the side of his house to his fenced yard.

"Want to see my trees?" he asked.

"Of course."

We stepped through the house, my appearance surprising his wife, and into the backyard, where the man gave me a tour of his yard. It was completely full of trees, an arborescent kitchen garden. As he had only moved into town from his rural land 12 years before – probably a common move and the reason that so many towns appear larger, – many of them were still small. We waded through the brushy shade as he grabbed a limb on each tree and identified it. All were fruit trees. The soil beneath us was dark and damp, an anomaly in the area. The kitchen orchard forest was made up of: orange (*Citrus sp*.), lime (*Citrus sp*.), mango (2) (*Mangifera spp*.), papaya (*Carica papaya*), banana (*Musa sp*.), coconut (*Cocos nucifera*), tamarind (*Tamarindus sp*.), and a jicaro (*Crescentia cujete*), as well as several ornamental bushes and plants. Many other houses supported similar settings. Combined, these

small domestic forests stand to contribute significant biomass, significant carbon cycling, and significant soil alteration.

In the left center of the photo background, the partially bald hillside just beyond the town is a cut bank exacerbated by Hurricane Mitch, which considerably reworked the river channel with its flood waters. Entire mango orchards were washed away as the river channel was widened a kilometer in places. In fact, southern Honduras probably saw the greatest fluvial geomorphological modifications in the country during the storm due to the rarity with which the area sees such amounts of water.

PP68 and PP69

Also in southern El Paraiso, San Antonio de Flores sits just a few kilometers from the Rio Choluteca and Nicaragua. It is far removed from major transportation routes. The town sits quietly above the descent toward the Gulf of Fonseca, most of its inhabitants making livings growing corn and some sorghum, raising livestock, and tapping the pine trees above the town for resin. Electricity has yet to arrive, though the poles and some wires stand ready.

The two photos that West took are from a hill above town looking south toward the southern descent. They are also very similar, having been shot from close vantage points on the hill. Neither vantage point was accessible to me because of

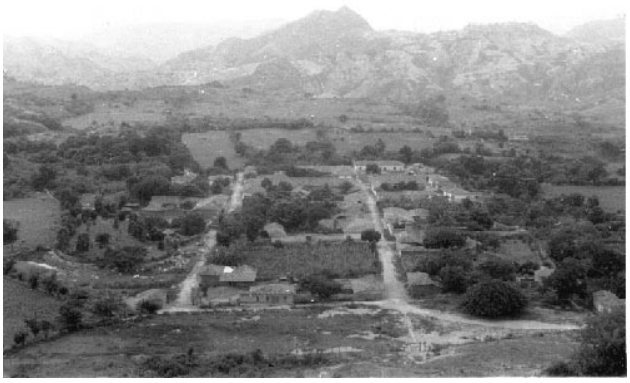
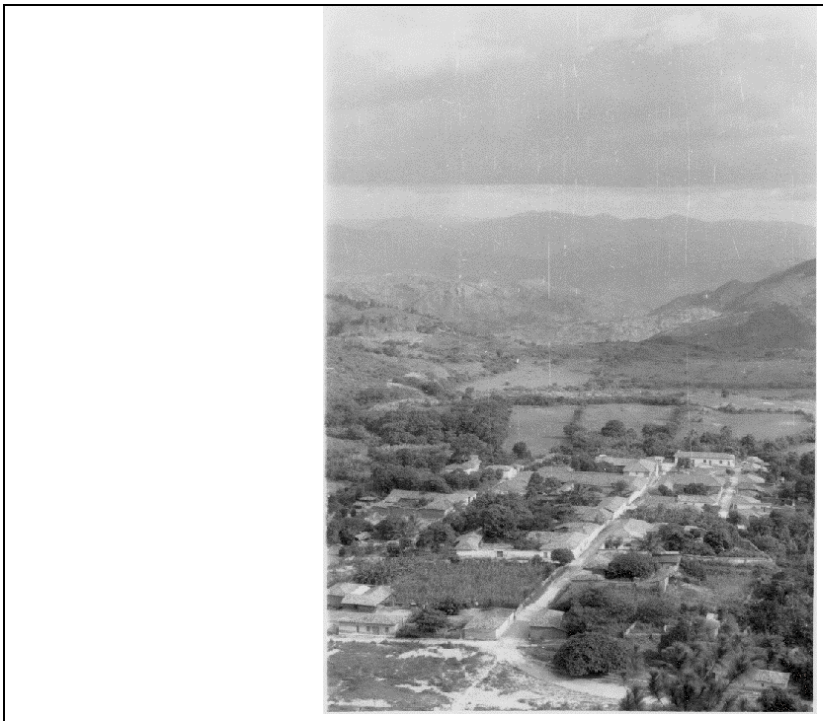


Figure 73. PP68; San Antonio de Flores, El Paraiso.



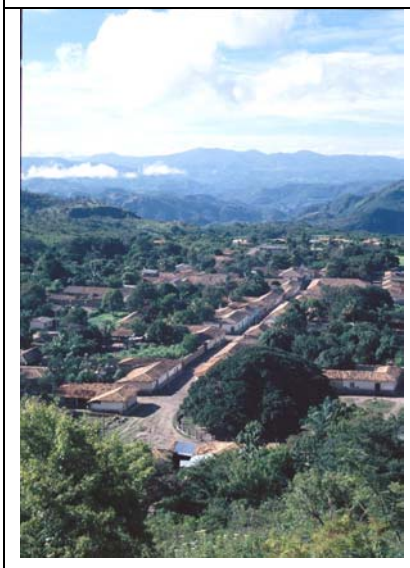


Figure 74. PP69; San Antonio de Flores, El Paraiso.

vegetation that has since grown up, blocking the view. The first repeat photograph in PP68 shows the top of some of this growth from the spot where West stood. The second repeat photo in both PP68 and PP69 is between both vantage points and provides the best I could come up with for each photo, though taken from a much closer position than were West's.

The two photos show the town's growth as well as an increase in tree cover both in and around the town. The hill slope in the foreground now supports more vegetation than when West visited in 1957. The town itself likewise has more trees, as does the area beyond into which it has expanded.

PP70

A few kilometers west-southwest of San Antonio de Flores, the small dispersed settlement of La Candelaria sits in a drainage that runs down toward the the Rio San Sebastian and thence to the Rio Choluteca. The original vantagepoint is reproduced in the first repeat photo, blocked by a dense stand of oaks 5-10m tall. The second 2001 photo was taken from a spot in front of and to the south of a section of this stand that does not reach as far down the slope. The settlement seems to have intensified somewhat, as does the tree growth in its area. On the slopes farther beyond, tree growth also appears to have increased somewhat. There, the trees are primarily oak and pine while in the settled

Figure 75. PP70; La Candelaria, El Paraiso.

area these and others, including eucalyptus and fruit trees, share the ground with grain milpas and more intensive onion and cabbage fields.

PP71

Once again, the original photograph's vantage point is now covered in a thick growth of trees, this time the small, thorny *monte bajo* vegetation of the *tierra caliente*. This is partially due to the relocation of the road farther down along the side of the slope and subsequent recolonization of the old roadbed by thick brush. The view, of a hamlet named El Zapote on a small river of the same name, shows the settled area in the valley and the slopes on each side. The foregrounds of the two photos probably should not be compared because of the different vantagepoints. However, the settled area and slopes beyond do show more vegetation. The large fluvial bar deposit that supported agriculture when West visited is gone, washed away by Hurricane Mitch's flood waters. Aside from these two changes, the only change I found was that locals no longer grow the coyol palms (*Acrocomia aculeata*) that West saw, having replaced them primarily with coconut palms (*Cocos nucifera*).

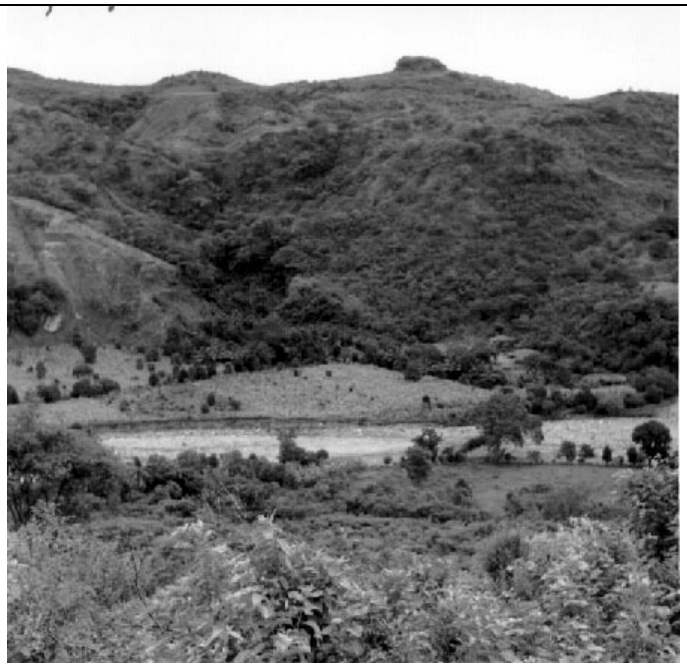


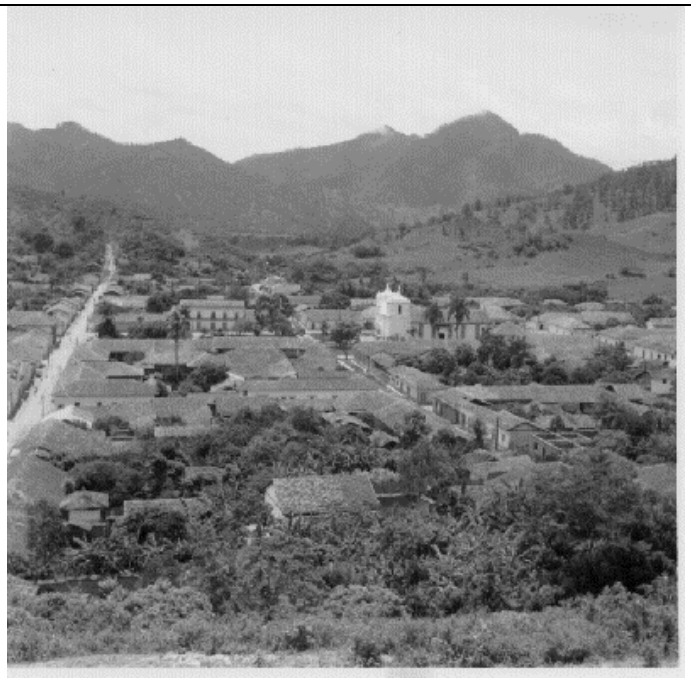
Figure 76. PP71; El Zapote, El Paraiso.

PP72 and PP73

Danli, El Paraiso, though not the departmental administrative center, is the largest town in the department. It is not far from the Nicaraguan border and, consequently its landscape still holds hints of U.S. involvement in the Nicaraguan revolution in the 1980s. A Friends of the Americas office and dental clinic occupies a large building just off of the central plaza. Men on the streets tell in broken English how they learned to murder and torture at Fort Binning in the United States. The area is also one of the two important cigar-producing centers in Honduras, the other being farther west in Copan.

PP72 looks north across the town. In the photo set, the town has visibly grown and more trees live there. Where settlement has spread up the small hill in the left background, tree growth appears thicker. The hill in the right background though, has lost some of its trees on top while gaining trees on its lower, now settled slope. The plaza in front of the church, an open space in the 1957 photo, is now filled with trees.

PP73 looks south from the other side of the same hill from which PP72 was taken. Far beyond the view is the town of El Paraiso and the border crossing into Nicaragua at Las Manos. In the 1957 photo, the area is practically all in agriculture. In the 2001 photo, agriculture remains, though barely. The town has grown south into this area and, thus, so too has the settlement forest of pines, eucalyptus, and fruit



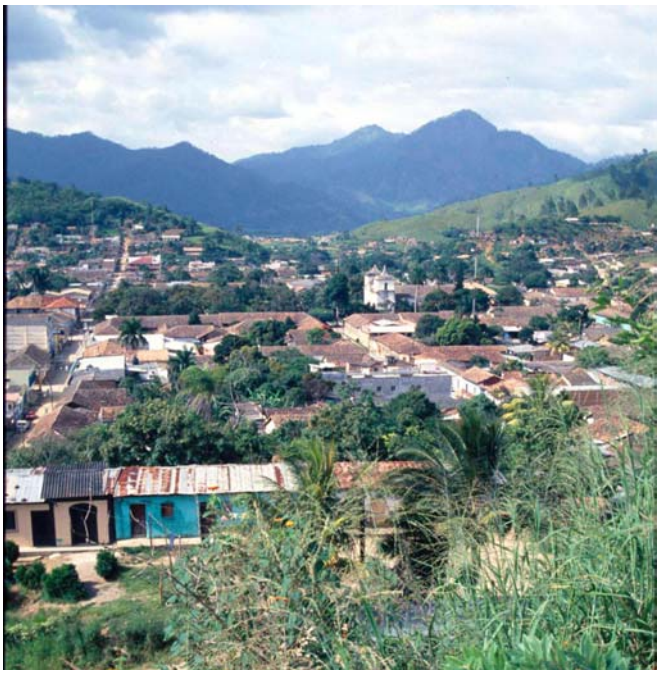
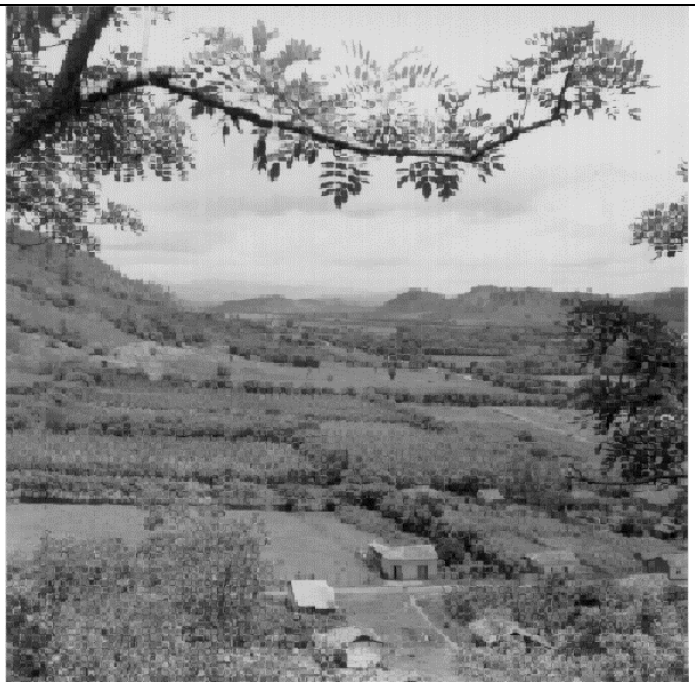


Figure 77. PP72; Danli, El Paraiso.



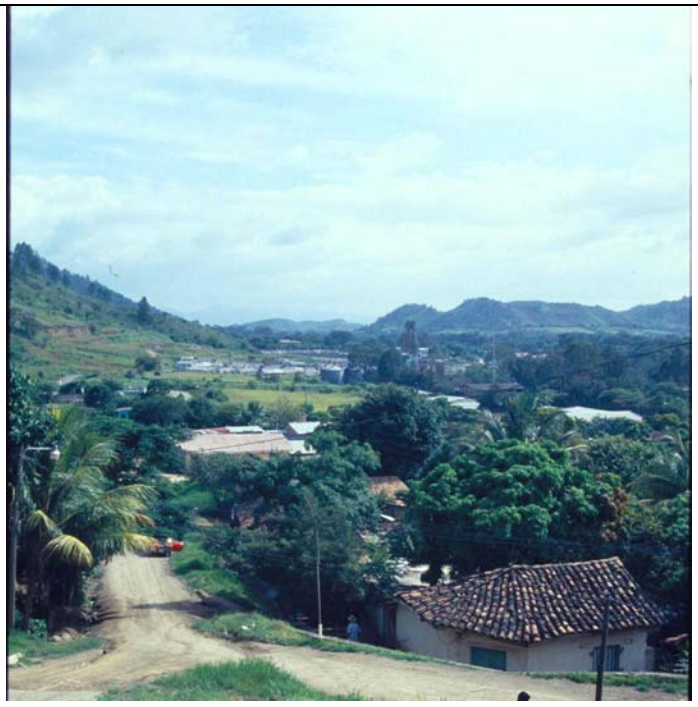


Figure 78. PP73; Danli, El Paraiso.

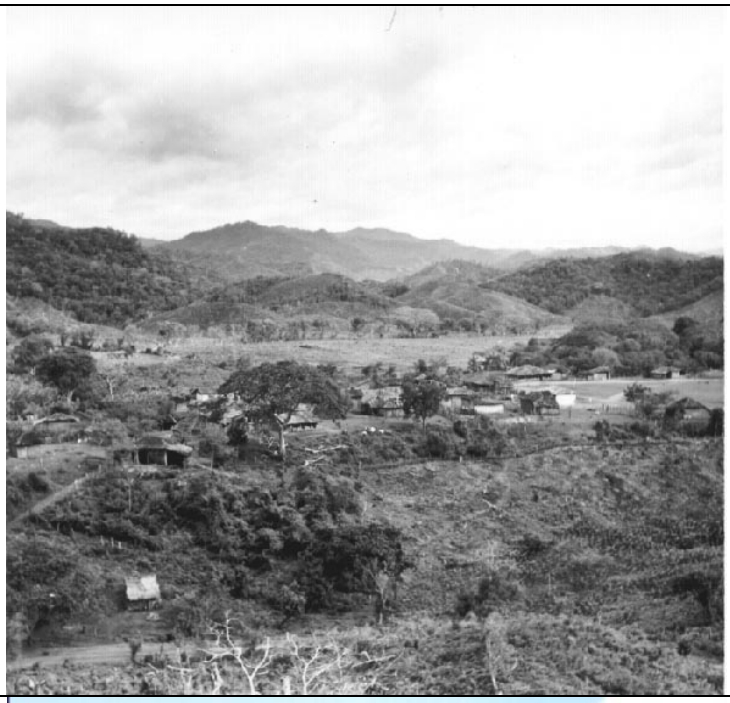
trees. The new transportation and electric infrastructure appears as well. In the center background, a larger granary now occupies a large area. The slope in the left background also now supports more tree growth than five decades ago; a few pines that seem to have been allowed to grow there.

PP74

A couple of hours by old bus east of Danli, the small town of Chichicaste sits just above the Jamastran Valley. It is hot and deathly quiet. It was a frontier settlement when West was there, a new home to migrants from nearby Olancho to the north. It is still a place for new migrants, though most have come recently from Choluteca to the south, to get away from, as they say, the bad land and droughts. Consequently, the town has grown. So too has its settlement forest, as the photo set indicates.

The hill from which West took his photo looks south over the town. The new photo shows the increase in trees in the town, as well as the growth of settlement and the addition of a church. The hill from which the photos were taken – the foreground – seems also to have more vegetation on it, as my photo was taken from the clearest vantagepoint I could find. However, the slopes in the background do not show an increase in forest or tree cover. Rather, they show a decrease. The pattern, perhaps common in some areas like this with recent population growth based on in-migration,

is that the settled area significantly gains vegetation while the surrounding area, if indeed used for agriculture, loses it.



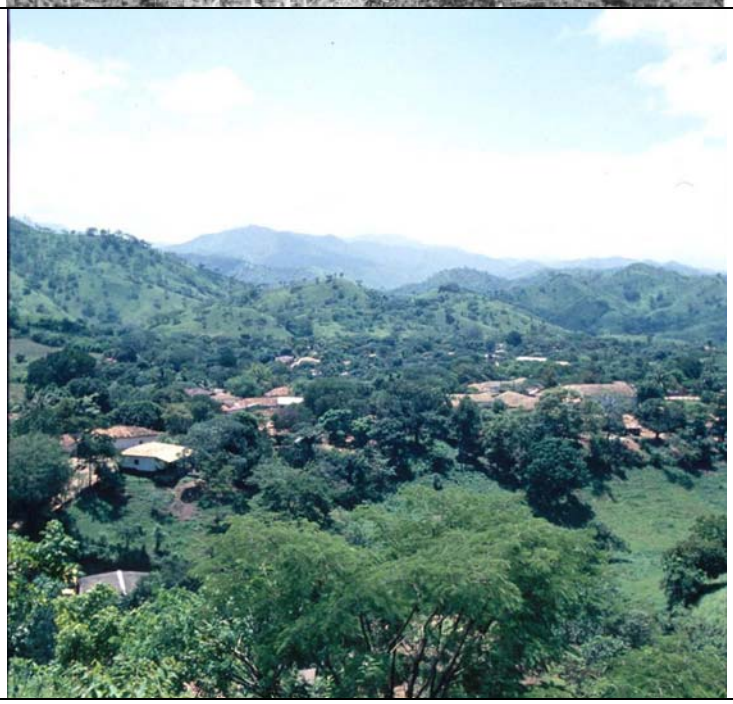


Figure 79. PP74; Chichicaste, El Paraiso.

Chapter 7
Aerial Photographs

Though color aerial photography is preferable to black-and-white in assessing forest and tree stands, black-and-white photos do provide useful information (see Thorley 1968:393). I obtained six aerial photographs from the *Instituto Geografico Nacional* (IGN) in Tegucigalpa. They are time-lapse series of three different places. The first set for all three places were taken in 1954, the only year to date that offers aerial photographic coverage for the entire country of Honduras. Of the second set, two are from 1992 and one is from 1990. The timeline, then, is generally the same as that of the landscape photos that are the basis of this project, though it doesn't reach as close to the present.

I chose photos for three places where I was conducting repeat photography. One consideration for my choosing photos was simple availability. I was seeking places where I had spent or planned to spend significant time. Of these places, I was seeking ones for which the aerial photography collection at the IGN offered relatively recent coverage. Again, the country has not received complete aerial photographic coverage since 1954, though significant areas have been covered over the past half-century through various projects (*Instituto Geografico Nacional* 1996). After extensive fieldwork, I returned to the IGN in search of more aerial photograph sets. However, I was told that the 1954 set was unavailable, at least temporarily, due to deterioration of the negative films. Thus, I am limited to the three sets that I obtained early on.

Here I offer an analysis of the air photo sets. For technological reasons, to be explained, I only offer two of the three sets for analysis. As one of the most intriguing aspects of the landscape photos in this study was vegetation change, I analyzed the sets to assess change in tree cover or presence. The result is meant to be complementary or supplementary information regarding vegetation change in the section of the country this project engages. Simply, my question was whether or not trees had increased or decreased over the years that the aerial photos cover.

To answer this question, I scanned the photos and adjusted for scale differences. I then opened them in ArcView GIS. Converted to a grid, the photos are read by ArcView in terms of color or grayscale. Essentially, the program simply reads the color of each pixel and assigns it a value. The values are grouped into classes, which are assigned a color or shade. The number of classes can be adjusted. In the Marcala photographs, setting the grid to read only two classes, the pixels are shown as one of two colors. The program reads the various shades of gray in the photographs and separates them into two classes, basically darker and lighter. In these photos, this separation follows relatively well a tree/no tree dichotomy, as the exploded view illustrates.

A table in the program offers a count of the pixels that are in each group. These can easily be used to assess the percentage in each category and the percentage of change in each category over the time covered. Thus, accepting that the program's perception of tones corresponds to a tree/no tree dichotomy, the change in tree cover or presence can be quantified using the data that the program provides with the grid

conversion. The 1954 Marcala grid shows 54% of its area as dark, or as trees. The 1992 Marcala grid shows this same category as 67%. Thus – again, accepting the program's reading – this represents a 24% increase in tree cover or presence. How much of this is forest and how much is shade for coffee I cannot say, but, as this is an area of intensive and intensifying coffee production, much of the increase is likely in the form of coffee shade, generally *guama* trees (*Inga* sp.)

For Lepaterique, I did the same as for Marcala. However, when I assigned classes for the grid that ArcView created, I noticed that, with two classes, only the thickest and darkest forest sections were being categorized in the dark class. The area in the photograph is an area of high relief in some places. The shadows that were cast on these slopes are very dark in the photographs. Thus the gray of most of the trees was light enough relative to the dark of the shadowed slopes that they were placed into the lighter class. However, much of this problem appears to be mitigated with the use of three classes. The darkest grays are placed in one class, other dark grays in the second, and lighter grays in the third. Though it is admittedly not as accurate as the Marcala set, the categorization works well enough to be used. If anything, some trees are still missed but this happens in both photos and so should not be a problem in the analysis.

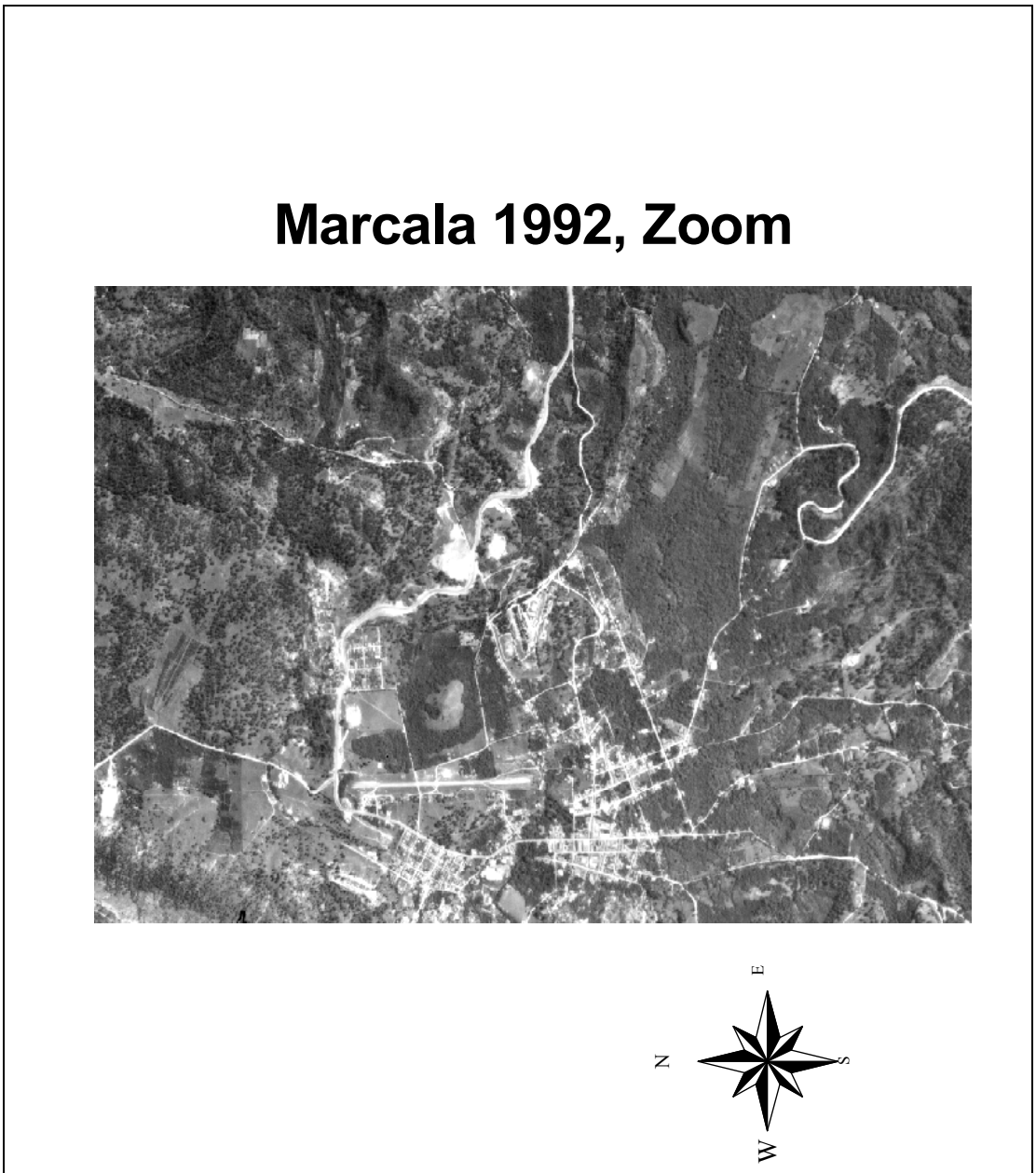


Figure 80. Exploded section of Marcala 1992 photograph. IGN R-L38 7365-003.

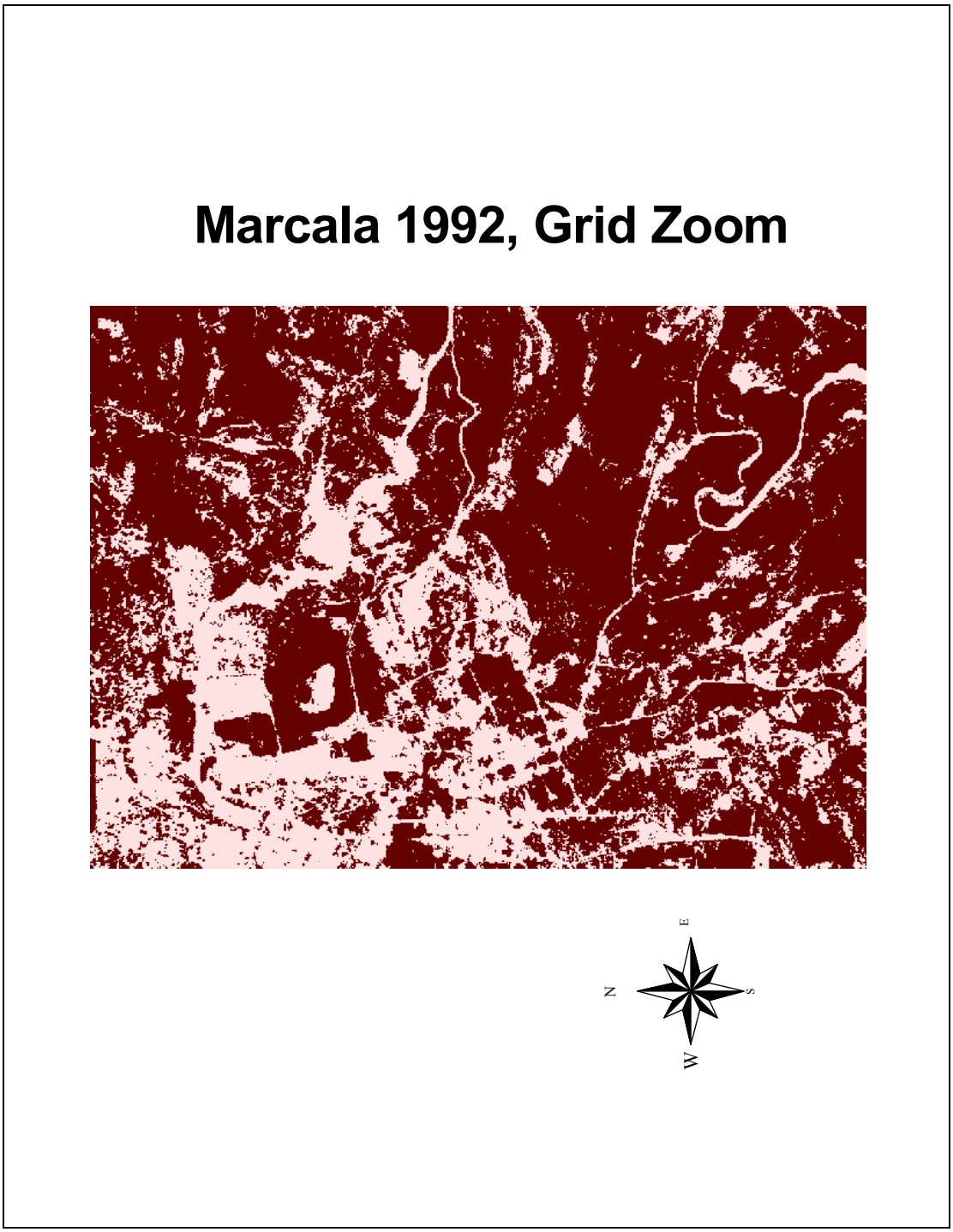
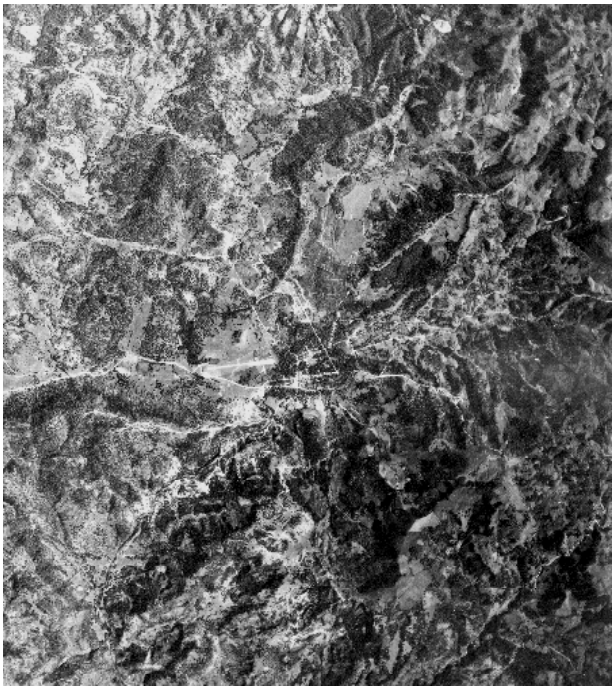


Figure 81. Exploded section of Marcala 1992 photo grid. IGN R-L38 7365-003.

Marcala 1954



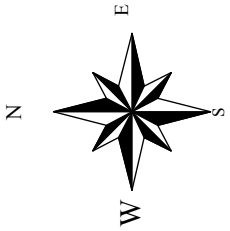
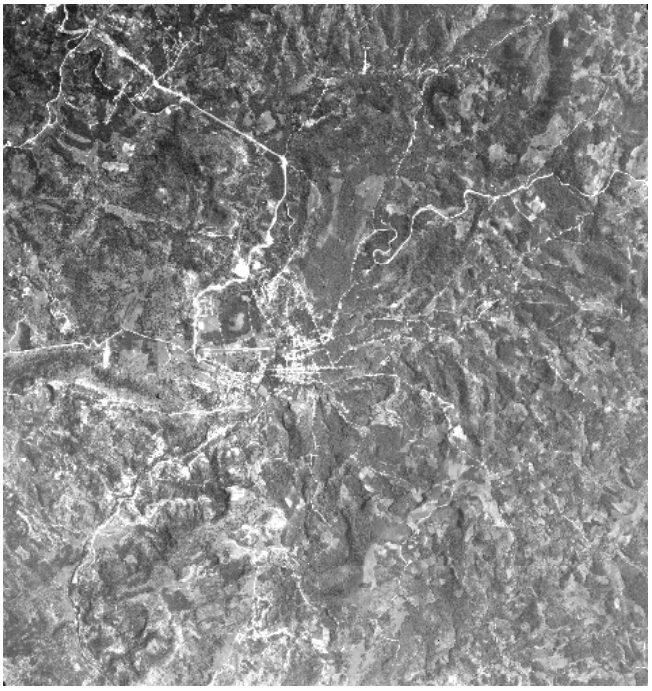


Figure 82. Cropped 1954 Marcala photograph. IGN VVWWS M45 5385-142.

Marcala 1992



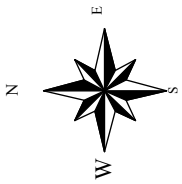


Figure 83. Marcala 1992 photograph. IGN R-L38 7365-003.

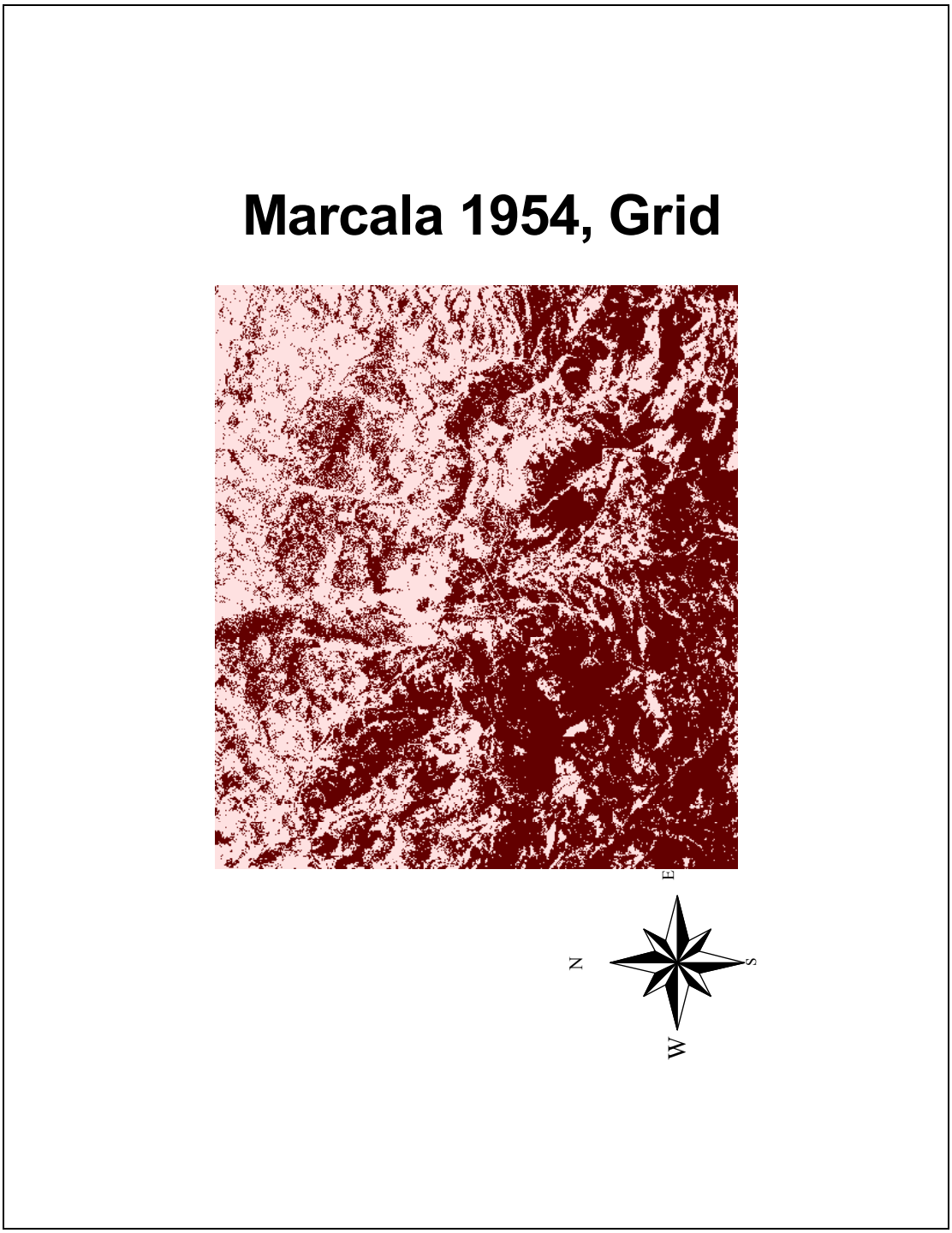


Figure 84. Cropped 1954 Marcala photo grid. IGN VVWWS M45 5385-142.

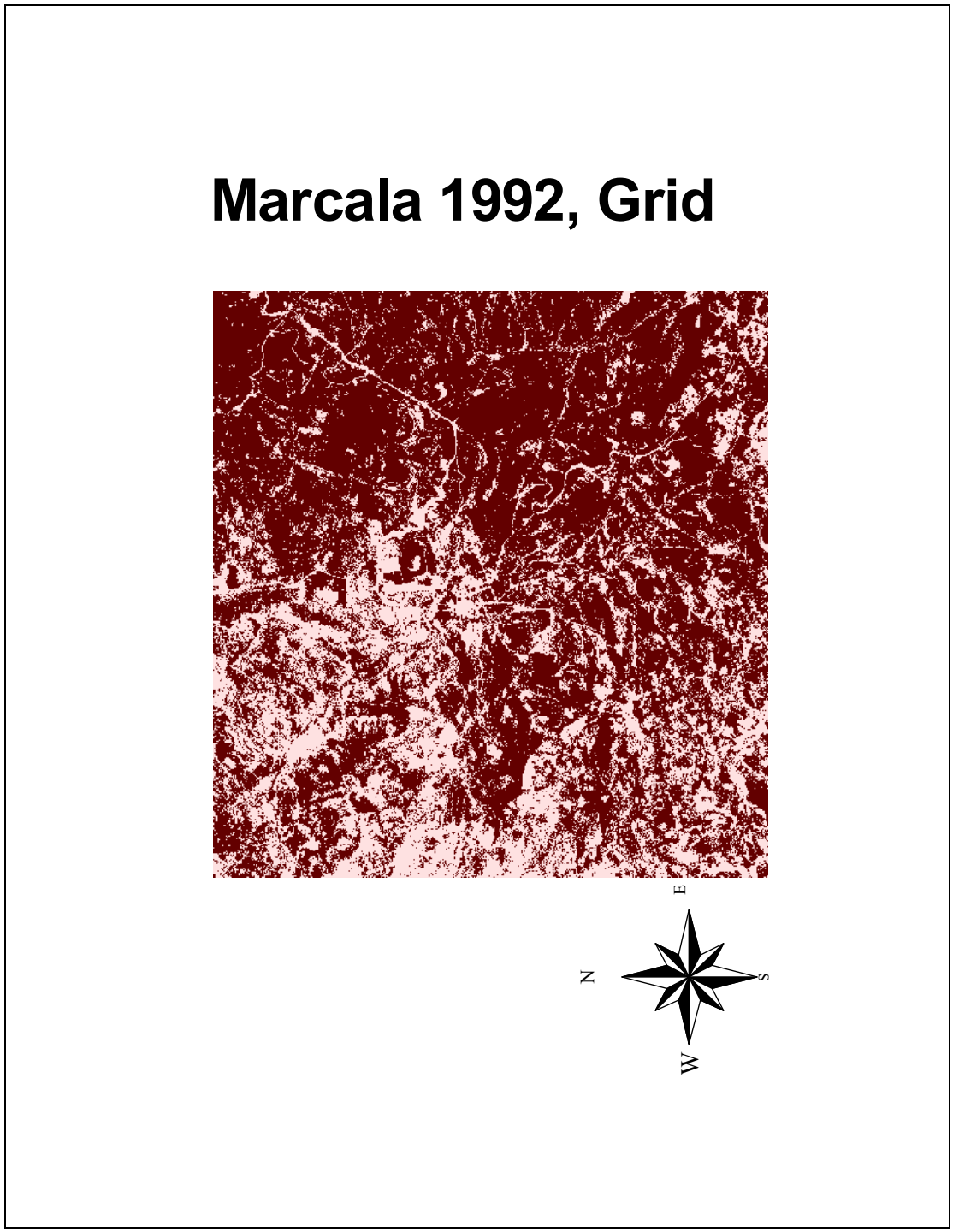


Figure 85. Marcala 1992 photo grid. IGN R-L38 7365-003.

Lepaterique 1954

Figure 86. Cropped 1954 Lepaterique photograph. IGN VVWWS M45 5462-142.

Lepaterique 1990

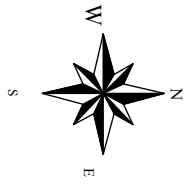


Figure 87. Lepaterique 1990 photograph. IGN 9803-082.

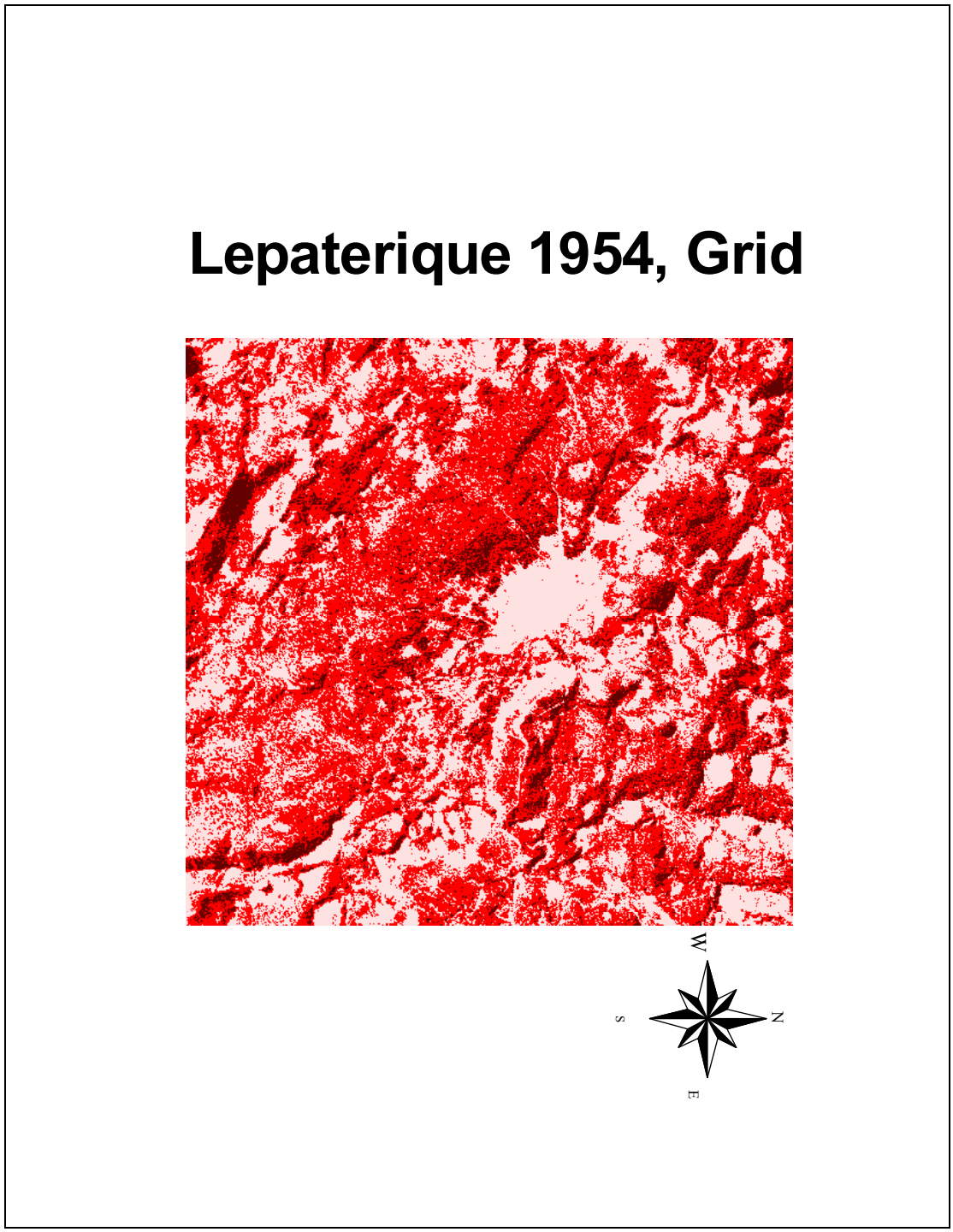


Figure 88. Cropped 1954 Lepaterique photo grid. IGN VVWWS M45 5462-142.

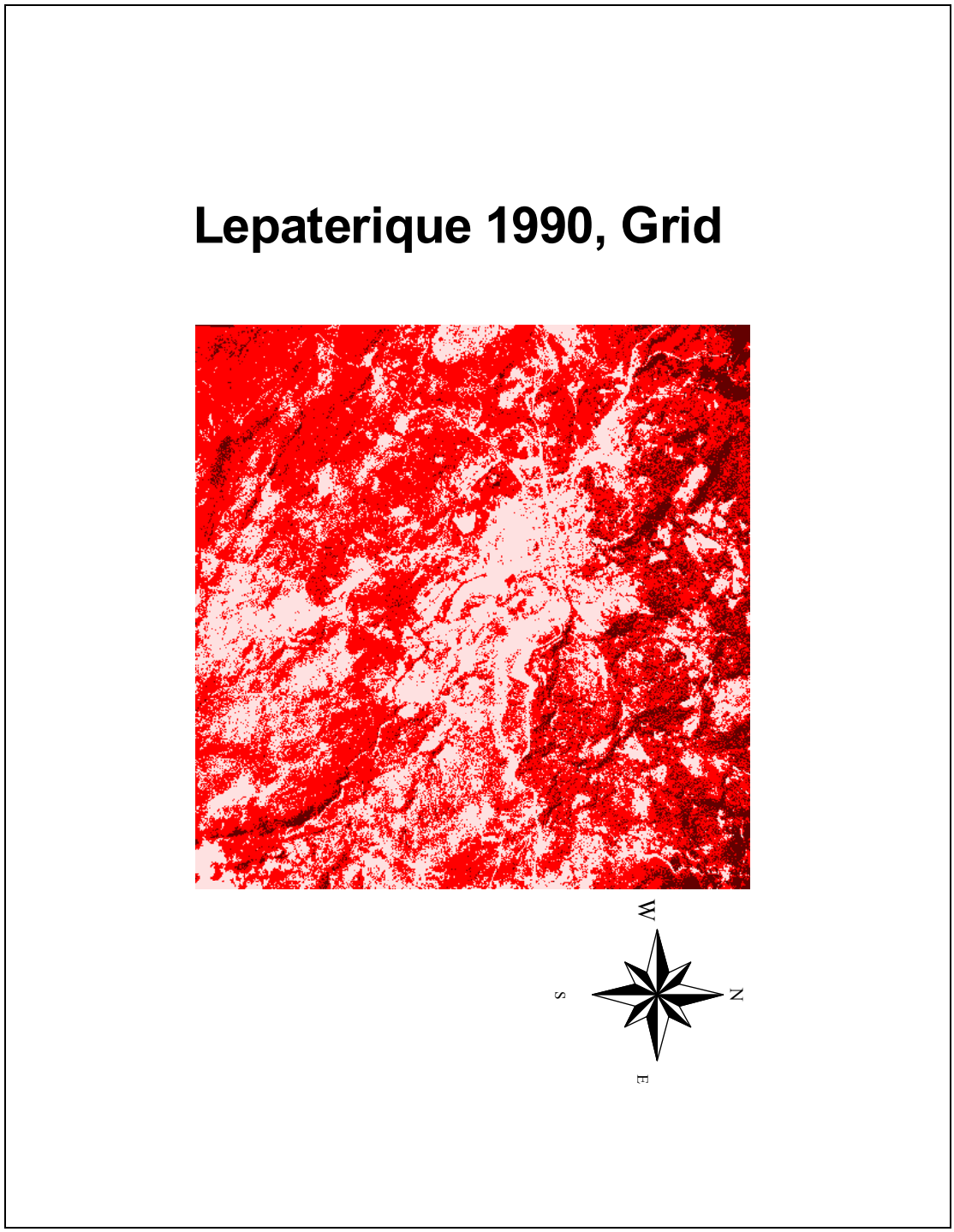


Figure 89. Lepaterique 1990 photo grid. IGN 9803-082.

The change in tree cover or presence around Lepaterique has changed only a little. The 1954 photo is interpreted as having 61% of its area in trees. The 1990 photo is interpreted as having 65% of its area in trees. This is a 6% increase. Unlike Marcala, this area has little coffee production and much of its economy is forestry-based. Hence, the increase is not as large as Marcala, neither is it likely to be coffee shade. It is almost surely in pine trees.

What these aerial photographs provide for this study is repeat photography at a different scale. They are a complement or supplement to the primary data for this study. The time period covered is generally the same as the two photo sets in Chapter 6, though the recent photos are not as recent. The photos only represent two very specific places in Honduras. They are not enough to warrant referring to them as any sort of sample. However, they do offer a look at two places in terms of tree presence and they indicate that indeed tree presence has increased over the past half-century. This points to the complexity of forest-related issues and environmental perception in tropical America that will be discussed directly.

Chapter 8
Why the changes?: Interpretation and Discussion

General Currents of Change

In Chapter 6, I presented and analyzed the pairs of photographs; those taken by Robert West in 1957 and repeat photographs of the same scenes. Several types of landscape changes appear in the photographs. Other changes have surely taken place in Honduras that do not appear but then that is one of the shortcomings of the methodology as discussed earlier.

Below, I outline and conceptualize the general trends of change apparent in the photographs. Table 2 outlines the types of changes that appear. The basic trends are modernization and development, global-local linkages, and vegetation changes. I cover them in this order. Several factors are involved in the vegetation changes, many of which are related to the other changes that I discuss.

Once general trends of change are identified, I want to better explain and contextualize them. Pertinent to this is a look at the Honduras that Robert West visited in 1957. What was it like? This, then, is compared and contrasted with the Honduras that I visited in 2001. As Entrikin (1991) showed, a place has a narrative-like synthesis that makes it what it is. Being synthetic, different aspects and factors are interrelated. Thus, generalized and contextual perspectives on Honduras 1957 and Honduras 2001 should help to make sense of how and why the place exists as it does today, both synthetically and in its various aspects.

Finally, I explain how the vegetation changes and the other types of changes are related, offering a contemporary context for understanding the vegetation changes that appear in the photographs. This also offers a perspective on the general state of Honduras in the world at the beginning of the twenty-first century.

Modernization and Development

Honduras is changing rapidly today. In fact, Latin America as a whole is changing rapidly (see Knapp 2001). Like other countries, Honduras is modernizing and developing throughout, going effectively "from burro to internet" (Argueta 1999). However, the InterAmerican Development Bank reported last year that Honduras and others in Latin America remain 100 years behind "rich countries" in developmental terms (El Heraldo 2001a: 60). Honduran newspapers report daily on efforts to modernize and develop towns and villages throughout the country. One newspaper has a special section entitled "*Transformacion Nacional*" ("National Transformation") that details various projects. These include water system improvements, housing construction for the poor or displaced, communications developments, and agricultural development, among other things.

Much of the development and modernization that is taking place is directly tied to developments in global transportation and communication infrastructures, as well as to the global political economy. Foreign organizations and funding are building or improving the country's infrastructures while, at the same time, Hondurans living in the U.S. send dollars back to their families daily (approximately

$600 million annually). American NGOs work on community development with projects such as micro-credit lending. Japan provides money and technological assistance in rebuilding bridges after Hurricane Mitch and in rebuilding the capital city's water infrastructure. A Taiwanese organization provides expertise in the development of wet rice production and in shrimp farming. Some of this appears in the photo set.

A significant part of these modernization processes, the transportation and communication infrastructures have experienced drastic expansions in recent years. For example, the region is cited to be increasingly one of the largest growing sectors of the expansion of wireless communications technology (Grupo Taca 2001: 101). Infrastructural development appears in many of the photos, in the form of improved roads or vehicles (for example, PP5, PP18, PP22, PP27, PP49, PP51), electric and communication lines and towers (for example, PP3, PP5, PP8, PP10, PP21, PP25, PP28, PP39, PP40, PP59) or the results of these, such as increases in commercial activity and in 'stuff'[5] (for example, PP13, PP14, PP16, PP18, PP31, PP40). Foodways, to offer one example of what comes with these changes, are slowly changing throughout the country with the expansions of household refrigeration and the growing presence of products such as instant soup imported from California, a Honduran favorite.

[5] Though the word 'stuff' is admittedly colloquial, I have not been able to find a more fitting word for what I am discussing. The word 'products' may seem better at first, but then it seems too industrial and impersonal. Barbie dolls, cheap watches, and plastic shoes from China simply seem more like 'stuff' than 'products' when seen on the streets, in markets, and in houses.

Education is likewise changing, experiencing a drastic expansion (see PP15). Small schools, often funded by foreign development interests, now dot the countryside. Villages that in 1957 offered schooling for only a handful of residents, and only through a few years, now have high schools. *Municipios* that a few decades ago had only one elementary school in the *cabecera* – principal town – now have schools in *aldeas* – hamlets – scattered throughout the landscape. Student populations have increased dramatically.

Tourism, at least at its present scale, is also a relatively recent development in Honduras and much of the developing world. It is now one of Honduras' top income producers. Especially in more remote areas, tourists are just now beginning to visit, bringing with them both money and exposure to ideas, prompting both economic development and, in some ways, cultural change. In some cases, such as at Omoa, this has led to large investments in infrastructure development (see PP1-PP3). In all cases, it brings increased exposure to the outside world.

Honduras' built environment is coincidentally changing, modernizing. This appears in many of the photos (for example, PP3, PP15, PP16, PP18, PP40, PP41, PP43). Construction technology, once based on locally available materials, is often based on the importation of both materials and technology. Cement block walls and lamina roofs are, in many places, more common than the once dominant, even ubiquitous, adobe-and-tile forms. As well, where villages and towns were often practically all whitewashed, a variety of painted colors appear, changing both the

faces of the places and their relationships to larger ecological and economic processes, in this case with those of the petroleum industry.

Though perhaps not of great apparent consequence, such changes in the built environment alter the relationships that people have with resource and technology supplies on local, regional, and global scales. The modern structures can be seen, then, as a reflection of the changes in local technology, resource access, and outside links, or "reach" (Buttimer 1980). Since we know that the landscape also guides our behavior, these modern landscape elements also surely teach and reinforce these changes. In some cases, modernization of the built environment also illustrates a sort of "reflexive modernization" (Giddens, Beck, and Lash 1994), where changes are meant to refer to the past (see, for example, PP23), going figuratively from "old" to "olde".

Global-Local Links

Though global-local linkages are directly related to many aspects of the modernization and development just discussed, I consider them separately here. This is because they are as much about the diffusion of information and ideas as about actual physical developments. These linkages both depend upon and drive the other changes. They are also at times more amorphous and qualitative in both their presence and their effects.

Loker, in *Globalization and the Rural Poor in Latin America* (1999), offers perspectives on globalization processes and global-local linkages in Latin America.

Part of this involves a series of linkages with the developed world, much of which involves a sort of information 'cultural imperialism' where Latin American culture is "under assault" (24). With recent developments in international institutions, multi-national corporations, and telecommunications developments, the transfer of information, technology, and money is guided by the developed world, primarily by North Americans.

Thus, global-local linkages are very important in contemporary Honduras. Of approximately 300 NGOs in Honduras in recent years (UNDP 1999: 121), at least 158 or them are linked to the United States (Inter-Hemispheric Education Resource Center 1988). They consistently bring millions of dollars and hundreds of volunteer workers to the country. Newspapers carry ads for American franchises and report things such as when Harrison Ford made a helicopter rescue and when R.E.M. appeared on The Simpsons (La Prensa 2001a and b). The U.S. Geological Survey recently took on a project to develop a database of geographical and topographical information for the country, claiming that Honduras would not be able to develop economically without it (El Heraldo 2001b). One of Tegucigalpa's Texaco Star Marts recently opened a new 'Chicken on the Run' franchise (El Heraldo 2001c). The linkages are clear.

The international tourism previously mentioned is also a factor in the development of global and regional linkages. It brings people who bring ideas and money. The money provides more access to these ideas and to the 'stuff' that coincides with them. Relatedly, NGO volunteers and missionaries – sorts of tourist

groups – proliferate throughout Honduras. They bring specific ideas about how things should be and the technologies that go with them. In the school in PP15 is a dentist office, in addition to the classrooms. It was built and is operated by a Protestant minister from the U.S. In PP16, an NGO-sponsored trash can offers a different perspective on how to deal with resources. Throughout the country volunteers with the Peace Corps, among other groups, teach Hondurans how to think and behave. One Peace Corps worker with whom I talked left his assigned site because, he said, there were nearly 20 NGOs working there. "There's no room for me. They're doing every kind of project you can think of. There's just nothing for me to do there."

These linkages, then, bring the diffusion of both technology and information as well as of cultural values. Juanita Sundberg (1998) showed how NGOs operate within a vision that is culturally specific and at times unaware or insensitive to the actual intricacies and complexities that exist in the places where they operate. Thus, an "NGO landscape" is a culturally defined one that may be imported with the people who engender it. Kees Jansen (1998), in a rich and insightful look at political ecology issues through a Honduran case study, also showed how NGOs typically operate with a model of perceived problems to be fixed. In the example he gives, this model is based on the perception of "a sleeping pig lying in a hammock: a depiction of the Honduran *campesino*" (244).

Money from other international organizations is changing the landscape too. The church in Lepaterique (PP24) was recently refurbished. The money for this came

from FHIS (*Fondo Hondureno para Inversion Social*), whose money comes primarily from abroad, much of it from the InterAmerican Development Bank (Presidencia de la Republica de Honduras 1991). Thus, the church's new façade is an indirect product of the global economy.

Visible in many of the photos is 'stuff'. Plastic Barbie dolls, cheap watches, 'No Fear' caps, and the like are everywhere in Honduras (PP6, PP13, PP14, PP18, PP31, PP40). They are for sale in large stores, in market stalls, and on ambulant vendors' arms. Much of this 'stuff' is labeled with 'brands' that are popular in the U.S. However, most of it is "knock off," cheap copies made in other countries, usually China or Southeast Asia. That the markers are the same as those which are popular in the U.S. is, I think, significant. They are culturally specific images from a specific culture.

Lawrence Samuel (2001) showed in great detail how post-WWII television, particularly the advertising that funded it, changed American culture. We learned what to like, what to do, what to buy, and, to a certain degree, how to live. Consequently, our regional differences did not disappear but they did diminish quite a bit. Hondurans are watching television voraciously. Some even blame this for the recent explosion in crime (El Heraldo 2001d). Mules carry car batteries for hours across rugged mountains to be recharged in the nearest town. These batteries very often are for powering televisions. Much of what is on the televisions comes from our culture. Thus, Hondurans are learning from them, from us.

As well and surely related to all of this, the U.S. holds a certain place in Honduran minds. Common sights – t-shirts that read "USA" (PP23, PP40), American flags on cars and buses, and even the label "USA" on a bag of Guatemalan fertilizer (PP13) – show what that place is. The reasons for this are surely various and complicated and likely involve, among other things, Honduran migrations to the U.S. and the $600 million dollars per year sent back (El Heraldo 2001e), television, U.S. "advertising through aid" in Honduras, especially since the 1980s (see http://www.honduras. usaid.gov), and the many NGOs operating there. This place is illustrated by a daily full-page newspaper ad while I was there. George Washington from our dollar and the Lempira from the Honduran *lempira* face each other (in dress shirts and ties no less) and implore people to save and earn interest in either *lempiras* or dollars (La Prensa 2001c). Too, having American stuff in Honduras – there are thousands of retired school buses crawling through the cities and mountain roads, for example (PP3, PP27) – surely creates an image of success and a corresponding set of aspirations, and sometimes resentments. Several Hondurans told me that their country is a "colony" of the United States, a "dependent". As one taxi driver explained, "Your country controls everything that happens here. It's too bad but then that's life."

Vegetation Changes

Table 2 divides the vegetation changes that appear into several types. These distinctions are made partly because of the differences in scale of some of the photos.

	Changes												
	Vegetation								Communication Infrastructure	Transportation Infrastructure	Modernization of Built Environment	Economic development	Global linkages
	Decrease	Increase											
Photo Pair		Public Plantings	Domestic	Settlement Forest	Peripheral	Agroforestry	Spontaneous Dense Stand	Random Dispersed					
1		+	+				+		+		+	+	
2		+					+				+	+	
3		+	+	+				+	+	+	+	+	+
4		+					+	+	+	+	+	+	+
5									+	+	+	+	+
6								+	+	+	+	+	+
7								+		+	-		
8										+	-		
9			+						+	+	+		
10									+	+	+		
11									+	+			
12		+							+			+	+
13											+	+	+
14											+		
15		+								+	+	+	+
16		+							+	+			
17			+						+	+	+	+	+
18		+					+				+		
19		+									+		
20		+							+	+			
21									+	+	+		
22			+						+	+	+	+	+
23			+						+	+	+		
24	-	+					-		+	+			
25		+						+					
26		+					+		+	+			+
27		+	+						+	+	+		
28		+	+										
29							+			+	+		
30									+	+	+	+	+
31		+					+		+	+	+	+	+
32		+											
33							+		+	+	+		
34			+		-						+		
35		+							+	+	+		
36		+											
37		+		+	+					+			
38		+			+				+	+	+		+
39			+					+	+			+	+
40		+	+	+	+			+	+	+	+	+	+
41			+			+		+		+		+	
42		+		+	+			+	+	+	+		
43					+		+	+	+	+	+		
44		+			+	-	+	+	+	+	+		
45			+		-			+		+	+		
46			+	+			+	+		+	+		
47		+		+	-	+					+	+	
48			+	+	+		+		+	+	+		
49					+				+	+	+	+	
50					+								
51		+					+		+	+	+		
52				+	-				+	+	+		
53									+	+			
54													
55		+	+	+					+				
56		+	+	+				+	+		+		
57			+	+	+			+			+		
58								+					
59								+	+				
60		+						+	+				
61			+	+						+	+		
62			+				+	+			+		
63		+						+	+		+		
64				+	+			+	+				
65	-				-				+				
66		+		+	+			+		+			
67		+	+	+	+				+		+		
68							+	+					
69		+	+	+			+	+		+	+		
70		+	+	+			+	+		+	+		
71				+	+		+	+					
72		+	+						+	+	+		
73			+	+	+			+	+	+	+		
74		+	+	+	-		+	+		+	+		
# of Total	2	36	26	20	9(15-6)	1(2-1)	18(19-1)	28	43	45	46(48-2)	18	15
% of Total	3%	49%	35%	27%	12%	1%	24%	38%	58%	61%	62%	24%	20%

Table 2. Change Types in Photographic Data.

As these changes are more distinctly clarified, for specific examples of each category, please refer to Table 2.

Public Plantings

Of the types of vegetation changes apparent in the photos, public plantings are the most common. Nearly half of the repeat photographs show vegetation increases that involve public plantings. These are vegetation – trees or shrubs – that have clearly been actively planted and are in public spaces; for example, along streets, in front of churches, or in plazas.

In the West photograph collection are several photographs of Honduran plazas. Some of them appear in the data set for this study. The repeat photos of these sites are consistent in that they show plazas that have changed from open and empty spaces to tree-filled places. If the modernization schemes that characterized the 1990-1994 Callejas regime planted trees in every accessible plaza in the country (and indeed it seems as if this might be close to accurate), how much biomass/land cover might that be? Assume one plaza per municipio. Honduras has 297 municipios. Assume, conservatively, 1/6 acre per plaza. That means that approximately 50 acres in Honduras were planted in some degree of tree cover during the modernization of the 1990s. Not that much.

Though not a great deal of coverage, this is important nonetheless because, though it may not be a huge increase in tree cover or biomass, it shows an increase in the interest in trees. In fact, in practically every public plaza and other park area I

visited, hand-painted signs hung on trees that read some variation of "Protect the Forest". The fact that many of these trees are imports – e.g., eucalyptus – is also significant (see Doughty 2000). To many Hondurans though, native or not, they are trees and, as such, represent the abstract forest, a valuable and necessary part of the world. Signs commonly announce "*No Hay Bosque, No Hay Agua. No Hay Agua, No Hay Vida.*" ("If there is no forest, there is no water. If there is no water, there is no life."), "*Conservar El Bosque Es Preservar Su Vida*" ("To conserve the forest is to preserve your life"), and, simply "*El Bosque es Vida*" ("The forest is life"). *Osembramos arboles o nos lleva puta*. This way of thinking about the world is evident in the Honduran landscape in both the signs saying and teaching so and in the trees representing so. It was not that way in 1957.

Domestic Growth

Many of the photos show vegetation changes of more than one type (see Table 2). Indeed this is the case in many of them. However, discerning how a particular photo's changes should be categorized is often difficult because the categories are contrived and the changes are often of different types. Thus, as well as many photos having changes of more than one type, some vegetation changes may be classified in more than one category. 'Domestic growth' and 'settlement forest' are two categories that overlap or share some trees. They are necessarily similar and, thus, necessarily share. However, they remain distinct categories. Not all of the settlement

forest is in domestic growth. Not all domestic growth makes up a settlement forest (see PP39, for example).

Domestic growth is vegetation associated with houses. The most common type is trees that have been planted around houses, usually behind. Most are fruit trees that also provide shade. One-third of the repeat photos show increases in this type of vegetation. Understanding why this has happened – why fewer houses had domestic trees or why houses had fewer trees – is difficult. Talking to people did not really provide me with much insight. One man did try an explanation, telling me that it was because a few decades ago people did not have domestic water supplies. Now, having public water, they are able to water plants and trees around their houses more easily and consistently. Perhaps.

However, another notion to consider is that Honduras, like most of the world, is becoming increasingly urban. People are consistently moving into town. While the most obvious of this migration is to the large cities, some people are simply moving from farmsteads into nearby towns. Many of these people, being accustomed to having trees around, fruit-bearing and otherwise, may be planting trees upon their arrival. I talked with several men throughout the country who did just this. Though not a complete explanation for the increase in domestic growth, this phenomenon is intriguing and probably accounts for some of the increase.

Settlement Forest

The settlement forest is perhaps one of the more salient aspects of the vegetation increases in this study. Including domestic growth and public plantings, as well as some of the more ambiguous categories, the settlement forest is simply vegetation that is associated with human settlement. In many of the photos, as a settlement has grown, the vegetation cover has increased and spread. In the U.S. this is typical too.

Dallas, Texas was basically open prairie when settled by Anglo-Europeans (Francaviglia 2000: 147-148, Jordan et al 1984: 9, 29). Today much of that area supports an urban forest that, in some places, has a remarkably dense canopy. Anyone who flies over other cities and towns can see that this is not an isolated case. Indeed, much of this kind of growth has often been planned and encouraged. Gumprecht (2001) showed how this occurred in the Oklahoma prairie town of Norman. Once a "treeless frontier outpost" (116), now the town is "known for its shaded streets and wooded campuses" (ibid.).

This apparently has been happening in Honduras too. According to the photos, most towns now have more trees in their settled areas than a half-century ago, although some of them, such as Chichicaste, El Paraiso, may also have less vegetation in the surrounding area (see PP75). The settlement forest is increasing. Too, as will be shown, this is very likely due in part to the growth and development of a local conservation ideology.

Peripheral

This category describes the changes in the backgrounds or peripheral areas of the photographs. It is, due to the resolution available for analysis, more general and provides very little in the way of specifics and types of changes. It is simply a way to categorize the increases or decreases in vegetation that appear in the backgrounds of the photographs. Though not peripheral to the study, this categorization is neither central, again due to the scale and resolution available. However, it does offer some insight. While some background areas have indeed lost vegetation, more have gained. Of the fifteen in which change is clearly discernable, only six show a decrease. In one of these, PP47 in Chinacla, La Paz, the area of decrease will likely began to increase again soon because the area of loss has been recently put into coffee production. The *guama* trees (*Inga spp*.) that are often used for coffee shade grow quickly and in a few years will likely support an overstory canopy. Thus, we are reminded both that the photograph captures only a specific moment and that the landscape, the world is constantly changing (Doolittle 2001).

Agroforestry

Agroforestry has become an important and popular issue in much of the world, in particular in the tropics (Rose and Ugalde 1997). Although it appears in only three of the photo pairs, it is likely a contributor to some vegetation increases in parts of Latin America and Honduras. Though we often think of agroforestry as orchards, it is also the shade that covers coffee plantings, the kitchen gardens that

stand behind houses, and the stands of trees that are grown or encouraged to grow for firewood and construction materials. In PP42, the tree patches that stand on the slopes across the *chagüite* are part of this last category. As such, in this case, they are products of population increase, a diversifying economy, and a conservation ideology. In PP44, former citrus orchards have given way to urban growth. In PP48, the foreground shows an increase in the type of coffee shade discussed in the previous section.

Spontaneous Dense Stands

Spontaneous dense stands are considered to be any vegetation stands that are relatively dense and cannot be definitely accounted for by actual cultivation. Though some of the vegetation that is included in this category was likely planted, as this could not be ascertained it has been placed here. Included are the thick growths that blocked the original views in PP26, PP29, PP48, PP68, and PP70, the overhanging limbs in PP18, and the coastal gallery forest in front of the fort at Omoa in PP1 and PP2. This is surely the most difficult type of vegetation change to account for. In some areas, such as the former mining areas, assertions about area recovery since mining activities stopped seem obvious. The thick growths that blocked so many views are more difficult to explain. Nonetheless, this ambiguous category, and some of the ambiguous increases that make it up, show that vegetation changes and that the state of vegetation and trees in Honduras is complicated and difficult to comprehend.

Random Dispersed

The final type of vegetation change considered here is 'random dispersed'. This is because so many of the photographs (37%) show more trees but in no particular discernable pattern. For example, PP63 looks up at Santa Lucia, Francisco Morazan. The vegetation increases are clear and obvious. However, no pattern or explanation is obvious. Some of it is settlement forest, some of it is domestic growth, and some of it is surely spontaneous. Further, though this is one of the former colonial mining areas, the vegetation increases in the photo do not seem to be attributable to recovery after the end of mining operations, unlike PP64. Another photo pair, PP70, likewise shows vegetation increases that are somewhat random and dispersed. These examples explain the nature of the category as well as showing its importance in the study. The category itself also shows the complexity involved in understanding contemporary ecological situations in Honduras and Latin America.

Honduras 1957

The Honduras through which Robert West traveled in 1957 was different than it is today. The country was far less developed, particularly in rural areas, than today. Travel in many places was limited to the feet of people or mules. Resource consumption was far more restricted. Communications, for many places and most people, depended on the actual human transport of information. Education in the contemporary sense was, for most, not an option.

When West visited, the country was under control of a military government whose takeover was precipitated by the corrupt leadership of Julio Lozano Diaz (Haggerty and Millet 1995: 36). The military, in this case, acted as an institution rather than an instrument of takeover. During this era, the Honduran economy was changing. Diversification was occurring and the middle class and organized labor was becoming more important (Argueta 2001). The hacienda was in decline and the elite position was being reappropriated by bankers, many of them the offspring of Middle Easterners who had begun to migrate to Honduras in the 1890s (ibid.).

In 1966, Latin American historian Frank Tannenbaum published *Ten Keys to Latin America*. In this general look at Latin America as a whole through looking at ten different aspects – land and people, race, religion, regionalism, hacienda, education, leadership, politics, U.S. relations, and Fidel Castro, – Tannenbaum also offers salient and general descriptions of where and how most people in the region lived. The typical community was a town of 100 to 200 families, "a little town of a few houses surrounding a square with a church, a municipal building, a jail, a few poorly stocked stores, and probably some unpaved streets" (22). Houses were closed in on themselves and contacts between the town and the outside world were limited; the town bought and sold little. "The capital of the state or of the nation [wa]s a long way off, and there [wa]s no reason for going there" (ibid.). "Most of the things the town need[ed] [we]re locally produced. The houses [we]re built of local materials, the shoes and clothing [we]re locally made, and … fashioned from hide locally tanned and cloth locally woven. Most of the food [wa]s grown nearby" (22-23). Most

people, he said, “ha[d] almost nothing to identify them with the modern world” (24). “They ha[d] no newspaper and there [we]re no books, for the people [we]re illiterate” (ibid.). “They carr[ied] their burdens on their own backs. They ha[d] no modern tools and few animals” (ibid.). In essence, he described the “almost complete lack of communication between country folk and city dwellers” (25). A few years before West’s visit, only 1.5 % of Hondurans read a newspaper (99).

Tannenbaum’s picture of life throughout most of Latin America, surely generalized, is probably accurate for the state of Honduras when West visited in 1957. Honduras’ population was only approximately one-quarter urban and most everyone practiced agriculture for a living (1961 Census). This is far from the Honduras, and the Latin America, that exists today in most places.

Honduras 2001

Honduras today is more urban, more connected, more modern, and more economically diverse than in 1957. Buses, retired from school districts in the U.S., blast down highways and crawl through mountains all over the country, carrying people, ‘stuff’, and information to the farthest reaches of the country. Radios and televisions carry information into homes daily. In contrast to the 1.5% of 1947, over 60% of the population has access to a daily newspaper (Marini 2001). The country is modernizing. A United Nations report even claimed that the aid that followed Hurricane Mitch’s destruction has accelerated much of this (U.N.D.P. 1999). This modernization includes: the consolidation of the political sectors that are connected

to agriculture, increased communication between the countryside and urban areas, the developed of a favorable macroeconomy, social integration, and commercialization (U.N.D.P. 1998: 110-111). Tannenbaum noted some of this coming, as did Wagner in Nicoya (1961: 249).

What Tannenbaum noted was the "tugging at [Latin Americans'] way of life, language, amusements, and their social and personal standards" by America (1966:174). As he put it, "[t]he greatest change of our time [in Latin America] is the consumers' revolution propelled by the United States" (202). He pointed out that this could be detailed "in a thousand ways from the cocktail to baseball, from the American movie to the Cadillac, from frozen orange juice to nail polish, from Coca-Cola to the office secretary, and from the American advertisements on television" (174). Wagner called it a "commercial revolution" (1961: 249).

The state of Honduras has indeed changed along the lines that Tannenbaum noted. Throughout this study, bits and pieces of the modern landscape, economy, and culture have appeared. They support that he was correct. Honduras is more modern, more urban, and more connected throughout to the outside world. An understanding of landscape change, even vegetation change, is better attempted when placed into such a contemporary historical context. Just as places are synthetic, with every aspect affecting every other, so are specific changes part of a larger whole, of a specific historical moment and the many factors and players that have affected it.

Vegetation Change and Modern Honduras

The vegetation changes that appear in the photo set are of various types. Nearly all of the photos show a net increase in vegetation. In short, according to this data set, there are more trees in Honduras now than there were nearly a half-century ago. Two caveats to such an assertion are important though.

The first is that the data set is spatially specific. The area upon which it focuses – the places Robert West visited – is primarily in the southwest portion of the country. Many sites, also with a southern tendency, are also in central and eastern areas. This portion of the country ('the south' and 'the west') is vastly different from eastern Honduras and from the north coast. The differences are both cultural and biophysical. In eastern Honduras, for example, many areas are indeed being deforested at the hands of frontier settlers (Bass 2002). Thus, to extrapolate the findings of this study to talk about the entire country or region is risky and, perhaps, unwise. However, most broad scale assertions are thusly based. In fact, poorly assessed data, or rough estimates often become 'facts' in scholarly research through overgeneralization or misunderstanding (see Jansen 1998: 227 on Stonich's use of WRI data and its limited reliability). Thus, some caution is advised in naively accepting this generalization regarding Honduras and vegetation increase. However, if several studies begin to show similar trends, this warning loses some of its pertinence (Southworth and Tucker 2001).

Second, 'more trees' does not mean 'more forest'. The two have long been distinguished in cliché and must remain so in vegetation studies such as this. In none

of the photographs that make up my data set does a significant increase in forest appear. To be sure, in some of the photos, large areas have experienced vegetation increases (PP66, PP71) but these are generally in more arid areas and the vegetation is the low, sclerophyllous *monte bajo*. In some photos (for instance, PP37, PP38, PP48), forest increase does appear in the form of fewer or recovered forest clearings but these are few and the areas still generally small. Thus, though 'aforestation' may be the best word to describe the vegetation changes in this study, caution is advised against using it to refer to forest increase or the end of deforestation problems.

One day I sat talking with the then-director of the *Instituto Geografico Nacional* and author of *Geografia de Honduras* (1997), Noe Pineda Portillo. I was telling him what I had been up to, rephotographing the sites photographed by Robert West, and then told him of the vegetation increases that I was seeing. He said that this was good, hopeful. He said that if I was finding more trees, he thought it was probably because of two things: 1) the creation and expansion of COHDEFOR and 2) the creation of the national parks and preserves. "Though they have been criticized some lately, they [COHDEFOR] have done a good job of influencing people's mentality, how they think about the forest, about trees, what they do with land and the importance of forest for clean air and water and such. The national parks, they were made in what? the seventies? the eighties? They are not perfect or perfectly managed. They are not even primary forest. They are secondary forest, mostly, and so are different than they would have been originally. But people see them, they see forest and trees and they notice the difference between that and the other lands. It's

good for making people recognize the importance of these kinds of places, the importance of forests." By talking to people and observing the landscape throughout Honduras, I had come to the same conclusions.

People with whom I talked consistently echoed the larger ecological discourse that I have learned through reading research and popular press reports here in the developed world. They use the right words and phrases. They talk about deforestation and subsequent soil and atmospheric moisture loss and temperature increases. They talk about the importance of forests and trees for water and for life. In essence, they are repeating a modern international ecological discourse, though simplified.

The landscape throughout Honduras is filled with this same discourse. Already discussed, signs in public spaces advertise the importance of forests, the importance of trees, and the need for conservation (see Zimmerer and Carter 2001 for a look at recent conservation efforts in the region). Many of these signs are put up by NGOs or affiliated groups. Many are put up by school groups, many of whom are taught, even in school classes, by NGO volunteers and under the auspices of conservation-based education programs. These signs both reflect what people are thinking and learning, as well as teach and reinforce these sentiments or ideologies.

Kees Jansen (1998) discussed how the discourse on environmental issues has filtered into the public. He noted how "[r]ural people, often illiterate, start using words such as 'ecology' and 'ecosystem'" (2). This seems to be, to some degree at least, the diffusion of a specific type of discourse and ideology. I would assert that

this is linked also to other ideological discourse and its diffusion into the culture through the efforts of internationally-linked conservation and development programs; global-local linkages.

An example of how people think of trees is illustrated by an example. In November 2001 on two different days, one of the major Honduran newspapers reported the death of two trees in Tegucigalpa (El Heraldo 2001f; 2001g). One received an entire page of coverage. The other received most of a page. One was a eucalyptus that was felled by strong winds. The other was referred to as an olive tree. The "defenseless tree" was cut down "by an irresponsible person." The event was called an "ecological crime" that "should be punished."

Thus, the public discourse in Honduras seems to favor conservation and ideological "forests" and "trees". Ecological, even climatic, problems are perceived as the result of deforestation and environmental destruction. Given the increasing connections of people throughout the country to the outside world, the increases in education, and the increasing interactions with international conservation and development groups – many Peace Corps volunteers actually teach classes, usually ecologically oriented, in the schools where they live – these attitudes may be seen as part of Honduras' modernization. The landscape changes that are characterized by vegetation increases, then, may also be seen as related to this. Every time I mentioned trees to someone, they responded with the conservation dogma mentioned earlier. The increases, like any other ecological situation (Jansen 1998: 26) are surely complex and multifarious. They are also, though, to some degree and at some level,

tied to the modernization of Honduras and the ideologies that come with it. One Peace Corps worker, when I described the vegetation increases that I was seeing, simply took credit for it: "Maybe the Peace Corps is finally having an impact." Maybe.

Chapter 9
Conclusion

Whenever I have described the research I have been doing, people almost always have responded the same way. After I describe the repeat photography project, the typical response is generally, "So are you seeing all of the deforestation everywhere?" This response was foremost among NGO volunteers and employees, North American or otherwise. Among academics, responses were generally more varied and inquiring, though many also asked about deforestation in the photos.

I must admit that I too expected to find a decrease in vegetation in the new photos. Having found differently, I was compelled to ask two questions. Why is there more vegetation in the 2001 photos than in the 1957 photos? And why did I (and others) expect to see otherwise?

Wendell Berry warned that "we have to be aware that as issues rise into popularity they rise also into the danger of oversimplification" (2002: 15). This is, I believe, part of the answer to the second question. In chapter 3, I provided a more detailed look at this. In short, tropical deforestation has received so much attention academically and publicly (thus, financially) in the developed world, that we have come to think of the tropics and deforestation correspondingly. When one is mentioned, the other springs to mind. Further, this popularization-leading-to-oversimplification has also, for many, turned the tropics into one giant rain forest that is rapidly being destroyed by the machetes of campesino colonists, the chainsaws of illegal loggers, and the bulldozers of land hungry ranchers.

These associations and images, of course, are not necessarily conscious. Sometimes they are, other times they aren't. They are, though, important in the ways we both think about and approach the world out there. They also are important in illustrating how issues become publicized and consequently simplified leading to perceptions, misperceptions, and perhaps even stereotypes. Having not found fewer trees in the repeat photographs, I needed to try and understand why I had such expectations from the endeavor. It is not that people have the facts wrong. The situation is simply more complex than we assume based on the information out there.

Geographers have access to numerous subjects of study and to as many methods for studying them. Since Humboldt at least, many geographers have expressed concerns over the human interactions with the biophysical world. This has led to a healthy body of work concerning vegetation and vegetation change. Of the methods available, several scholars have used repeat photography to study change, vegetation and otherwise. The method is incomplete because it relies upon small extractions and representations of the actual world out there to make large generalizations. However, due to the restrictions on the second photographer, the method does offer a way to, in effect, sample the landscape. This sample can be extrapolated to generalize about what is going on at a broader scale. Adding other methods of inquiry to the data collection further contextualizes the changes that appear. Ethnography, or talking to people, especially adds to the study because it offers insight into what the people of a place think (or at least, what they say they

think). This provides a more complete or contextual picture of what is going on in that place and, hopefully, why.

In this study, I have presented a collection of photographs of Honduras. Geographer Robert West took half of these in 1957. The other half are repeat photos of the same scenes that I took throughout the second half of 2001. The photo set offers 74 glimpses of the Honduran landscape in 1957 and how those particular landscapes changed between 1957 and 2001. Though the photos show many kinds of change, the most consistent change was also a surprise, illustrating another strength of the methodology. The photos show an overall vegetation increase. Veblen and Lorenz (1991) and Lewis (2002) offer similar findings in Colorado and Australia, respectively.

Honduras has seen a drastic increase in interest in conservation and development since West's 1957 visit. Especially with increased activity on the part of international organizations and increased transportation and communication infrastructures and the global-local links that they engender, such interests have proliferated and filtered into the public. Hondurans and foreigners alike expected that the repeat photographs I took would show fewer trees. So did I. This expectation seems to be due to the recent proliferation of study and publications focused on tropical deforestation. People expect that the tropics, American and otherwise, are a collection of landscapes of deforestation. A closer look shows differently. Though the landscapes in the photographs are not forest landscapes, they do show a vegetation increase. Trees are not necessarily a forest but biomass is biomass.

Further, talking to Hondurans offered me more insight into these changes. Hondurans consistently told me the same story: that in years past it was cooler, cloudier, and rainier; that now it is hotter and drier; that this has happened because of all of the deforestation. However, many of the times I listened to this story, I was standing with one of West's photos overlooking the same landscape and seeing more trees, not fewer. The people, however, insisted that deforestation is ruining their land. What this told me was that a conservation-based public education campaign has succeeded. The landscape also echoed its success in the signs that hang in public places announcing the virtues of trees, forests, and water and their protection.

In a sense, then, this study may be about landscape perception as much as about landscape change. I expected less vegetation. Hondurans expect less vegetation. They consistently hold forth on the environmental changes that have taken place, echoing what international organizations, such as the Peace Corps, say. Something caused this. Had I not retaken these photographs, I may even have been convinced that I was looking at landscapes with less vegetation than existed half a century ago. However, and as several scholars are beginning to show (Byers 2000, Southworth and Tucker 2001, Rudel et al 2002), ecological situations in the American tropics are more complex than this. Veblen and Lorenz (1991) found this in Colorado and Lewis (2002) found it in Australia. As well, some places have indeed seen increases in vegetation. Though the reasons for such increases are difficult to come by as many factors are involved and the changes are of different types, I feel it

pertinent to point out the potential connection between public discourse and the landscape.

What people do depends on what they think and what they say to each other. This depends on the information that they share; their culture. Looking at the landscape in Honduras, I see a large body of ecological information. Much of it says that people need to conserve and protect or face a dim future. Listening to people in Honduras, I hear the same thing. Many of them learned it in school, others from local conservation workshops or even from the radio or television. Thus, the information that Hondurans share says that deforestation is a problem. People include this in their cultural discourse. They also then potentially include this in their decision making.

Perhaps, then, people are consciously acting on this information, planting or protecting trees. They are surely talking about it. One way to interpret the vegetation changes in the photographs, then, is that the conservation education program is working. Particularly if it is coming from the developed world – as it seems it is, – it stands to also hold even more import. A cheap Chinese-made watch is thought to be better because the label ADIDAS incorrectly but directly associates it with the U.S. The Honduran landscape is rampant with images, icons, and products that say, in effect "USA". This illustrates the global-local links that exist between Honduras and the outside world, especially the U.S. If the conservation dialogue is also involved here, it is probably also thusly accepted. Perhaps the vegetation increases, if they are indeed related to the public conservation discourse, can be seen as a measure of the partial success of such agendas. Rather than interpret a lack of vegetation decreases

in the photos as a lack of environmental problems, as Bjorn Lomborg, author of *The Skeptical Environmentalist* (2001) might do, we might look at it as an indicator of some success. However, it is important to remain conscious that the causes of such landscape changes, as Jansen went to great lengths to point out regarding environmental deterioration (1998: 194), are plural and complex. This highlights some of the complexities involved in such issues.

As for the landscape, this study illustrates its value as an arena for inquiry. We should continue to look to and at it for insights into what we are up to. Here I have examined the landscape of Honduras. I used repeat photography to do this. I contextualized this with talking to people, by looking at the landscape and listening to those who make it. What people say is important. After all, the landscape of a place is material-ecological space (Cronon 1983, Sauer 1923). This space is also experienced and wrapped up with social and cultural processes and contexts (Mitchell 1996). These processes are influenced by the landscape (Duncan 1990). As well, these processes –how we think – affect what we do with the landscape (Cosgrove 1984).

The landscape-as-ecological artifact reflects what we think and what we do with our world accordingly. This approach emphasizes how ideologies, perceptions, and culture determine what we will do with and make of the landscape within which we live. Both Cosgrove (1984) and Cronon (1983) went to great lengths to illustrate how this works. But these ideologies and the actions and physical and cultural manifestations they engender are never constant. The world is in constant flux,

generally a consistent occurrence of regulated improvisations, or *habitus* (Bourdieu 1971). Looking, as this study does, across time makes us more aware of this change. As well, it makes us aware that our perceptions are culturally based. The actual changes in the world's landscapes and what we imagine them to be may not be the same.

In addition to continued attention to ecological conditions throughout the world, we would do well to continue to assess the cultural and social aspects of how we approach and interact with the environment. In the end, after all, it is what and how people think that guides what we do with our world. Channels of information that increasingly connect our world stand to impact global thinking. Thus, in the end, the information that goes through these channels will determine, at least at some level, what we make of our world.

Through a collection of repeat photographs, the landscape in Honduras tells a story here. The story is somewhat surprising. It also may have remained hidden from us if the landscape approach weren't used. As an ecological artifact, the Honduran landscape offers a glimpse into the complexities of human relationships with our physical world and our attempts to understand and moderate them. It also, in this case, offers a bit of hope; hope that perhaps efforts to educate and conserve can have an impact, that the environment is not necessarily in a hopeless state, and that the future need not be as bleak as some foresee. However, we should recall Sauer's prescription that:

> [w]hat we need more perhaps is an ethic and aesthetic under which man, practicing the qualities of prudence and moderation, may indeed pass on to posterity a good earth (1956: 68).

Indeed.

Appendix

Repeat Photo Pair	West Photograph Collection Number
1	H1, 18-8
2	H1, 19-3
3	H1, 18-9
4	H 18-5
5	H 18-7
6	H 6-37
7	H 6-36
8	H 6-18
9	H 6-17
10	H 6-21
11	H 6-19
12	H 6-20
13	H 1-0
14	H1, 15-4
15	H1, 15-5
16	H1, 17-4
17	H 1-15
18	H 1-18
19	H 1-8
20	H 1-31
21	H1, 13-9
22	H1, 13-8
23	H1, 12-3
24	H1, 13-7
25	H 3-30
26	H1, 5-10
27	H1, 5-11
28	H 3-2
29	H1, 1-1
30	H 3-0
31	H1, 20-3
32	H1, 20-4
33	H1, 1-7
34	H1, 1-9
35	H1, 2-9
36	H1, 7-11
37	H1,6-6
38	H1, 18-4

39	H1, 15-6
40	H1, 15-2
41	H1, 16-1
42	H1, 16-5
43	H1, 16-2
44	H1, 15-9
45	H 1-5
46	H 1-6
47	H 1-13
48	H1, 15-8
49	H1, 16-8
50	H 1-27
51	H1, 14-3
52	H1, 12-11
53	H1, 12-5
54	H1, 10-2
55	H1, 10-1
56	H1, 8-8
57	H 2-13
58	H1, 6-3
59	H1, 4-6
60	H 3-8
61	H 3-6
62	H 3-7
63	H1, 4-9
64	H1, 1-5
65	H1, 3-2
66	H1, 2-10
67	H1, 8-1
68	H 4-7
69	H1, 7-8
70	H 4-14
71	H 4-15
72	H1, 7-4
73	H1, 11-5
74	H1, 11-6
75	H1, 10-10

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Vita

Jerry Owen (Joby) Bass, Jr. was born in Mansfield, Louisiana, in 1967. He received a Bachelor of Arts degree from Louisiana State University in 1990 in history. Following this, he became a student of life for six years, living and working in a variety of places and settings from firefighting in Wyoming to sailing in the South Pacific to fixing locks in Idaho. He entered the graduate program in the Department of Geography and Anthropology at L.S.U. in fall of 1996 and received a Master of Arts degree in Geography in May of 1999. He continued his education, entering the doctoral program in Geography at University of Texas at Austin in August 1999. He is committed to never quit learning and to spend as much time as possible outside. He also likes to make lamps.

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